Zenza BRONICA®

ETR/ETR-C

PARTS LISTS
&
REPAIR MANUALS

ZENZA BRONICA IND., INC.

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ETR-C CAMERA

Parts List & Repair Manual

1. Composition

   1. It consists of 9 pages.

   2. Pages 1 ∿ 4 consist of parts lists.

   3. Pages 5 ∿ 9 consist of exploded views.

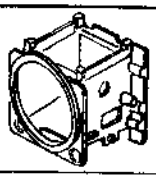
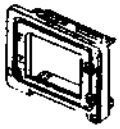
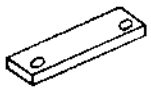
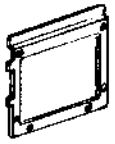
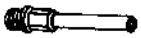
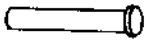
2. On Parts Lists

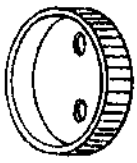
   Only ETR-C specialty-parts are described.
   For common Parts with ETR, refer to ETR-Parts Lists.

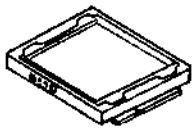
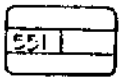
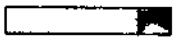
3. On Exploded Views

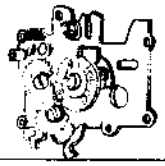
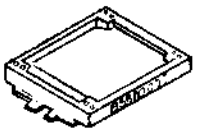
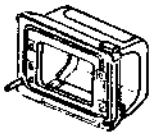
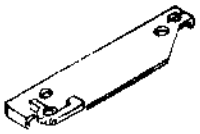
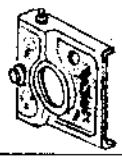
   1. Based on ETR-C Parts Lists, only those related parts are described. Therefore, just like Parts Lists, for the common parts with those of ETR, refer to ~~the exploded views~~ of ETR.

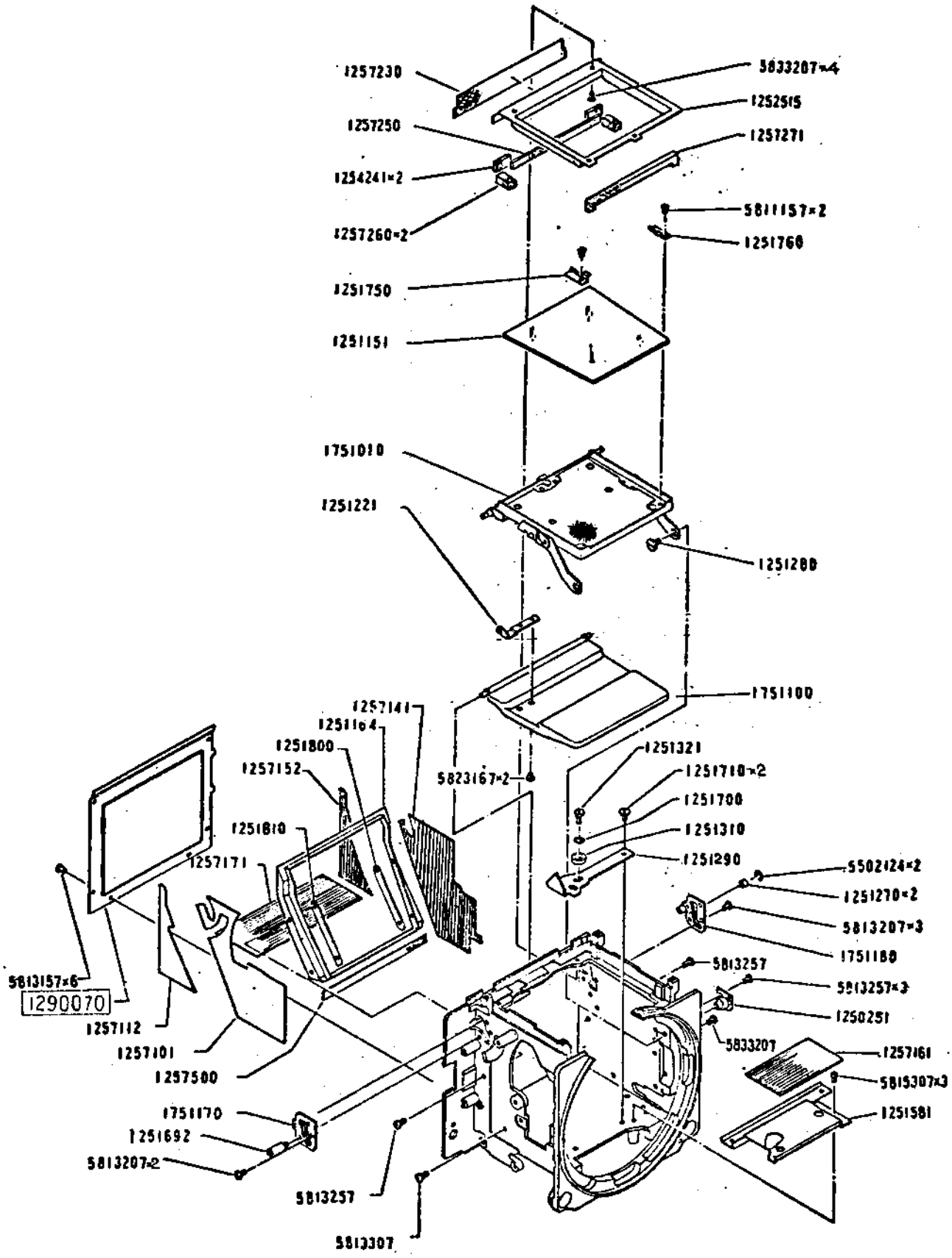
   2. In exploded views, the part encircled with ⌐¬ means the specialty-part for ETR-C.

Parts No. 部品番号	Name 名称	Shape 形状	Pcs.per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
							
1-290020	Connecting plate 結合板		1				
062	Bottom cover 下カバー		1				
070	Back douser 背面遮光板		1				
082	F-releasing pin sleeve F解除ピンスリーブ		1				
091	F-releasing pin F解除ピン		1				

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-290120	Right cover-mounting pillar screw 右カバー取付柱ネジ		2				
131	ETR-C name plate ETR-C銘板		1				
151	Right cover leatherette (front) 右カバー革前		1				
161	Right cover leatherette (back) 右カバー革後		1				
171	Left cover leatherette 左カバー革		1				
181	S-dial leatherette cover Sダイヤル蓋革		1				
200	S-dial ring Sダイヤリング		1				
210	Back bottom cover liner バック下カバーライナー		1				
220	Liner for right cover bottom 右カバー革下用ライナー		1				

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-290230	ERT-C top frame ETR-C上枠(彫刻図)		1				
250	551 QI label 551 QIラベル		1				
270	Connection plate telemp 結合板テレンプ		2				

Parts No. 部品番号	Name 名称	Shape 形状	Pcsper Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
I-792010	Winding base plate unit 捲上地板ユニット		1				
I-796010	Top frame set 上枠セット		1				
I-797000	Connecting plate set 結合板セット		1				
I-797210	Back top cover-caulking set バック上カバーカシメセット		1				
I-798020	55l left cover set 55l 左カバーセット		1				
I-798040	55l right cover set 55l 右カバーセット		1				


1257230
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1257250
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1251151
1751010
1251221
1251280
1751100
1257141
1251164
1251800
1257152
5823167×2
1251321
1251710×2
1251700
1251810
1251310
1257171
1251290
5502124×2
1251270×2
5813207×3
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1290070
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5813257×3
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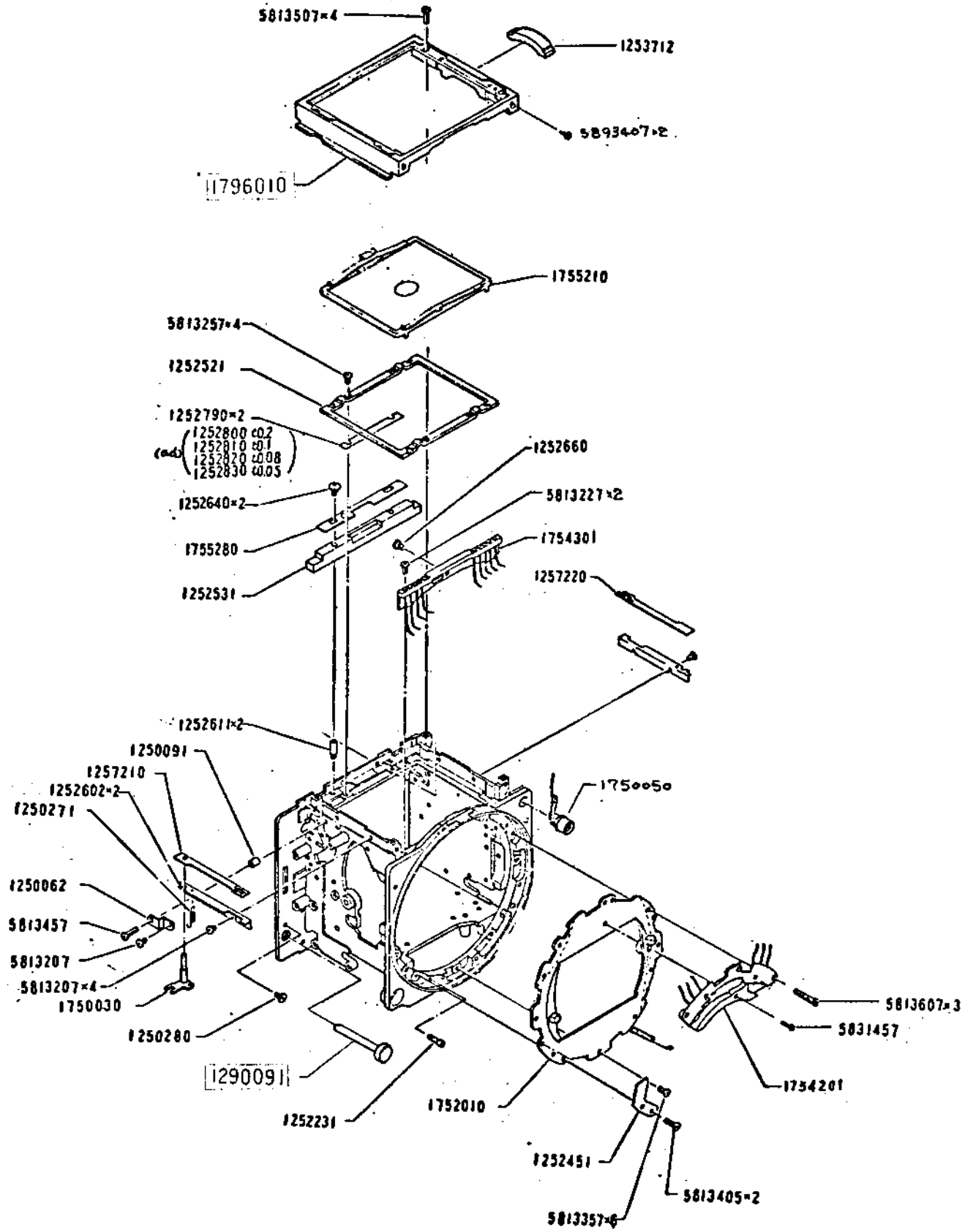
5813307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1755210
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1252790×2
(add) 1252800 ∅0.2
1252810 ∅0.1
1252820 ∅0.08
1252830 ∅0.05
1252640×2
1755280
1252531
1252660
5813227×2
1754301
1257220
1252611×2
1250091
1257210
1252602×2
1250271
1750050
1250062
5813457
5813207
5813207×4
1750030
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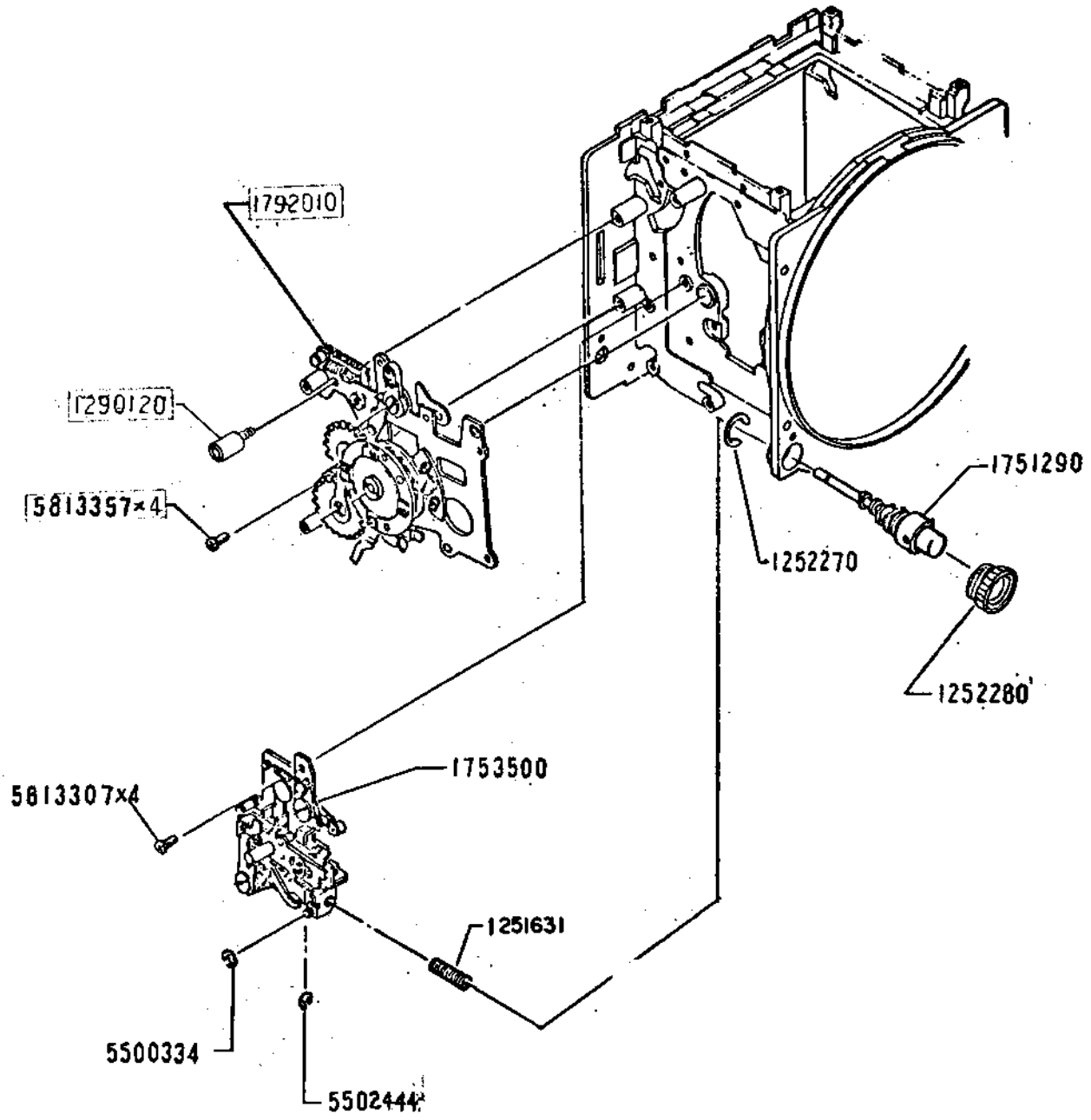
5813405×2
5813357×6
5813607×3
5831457
1754201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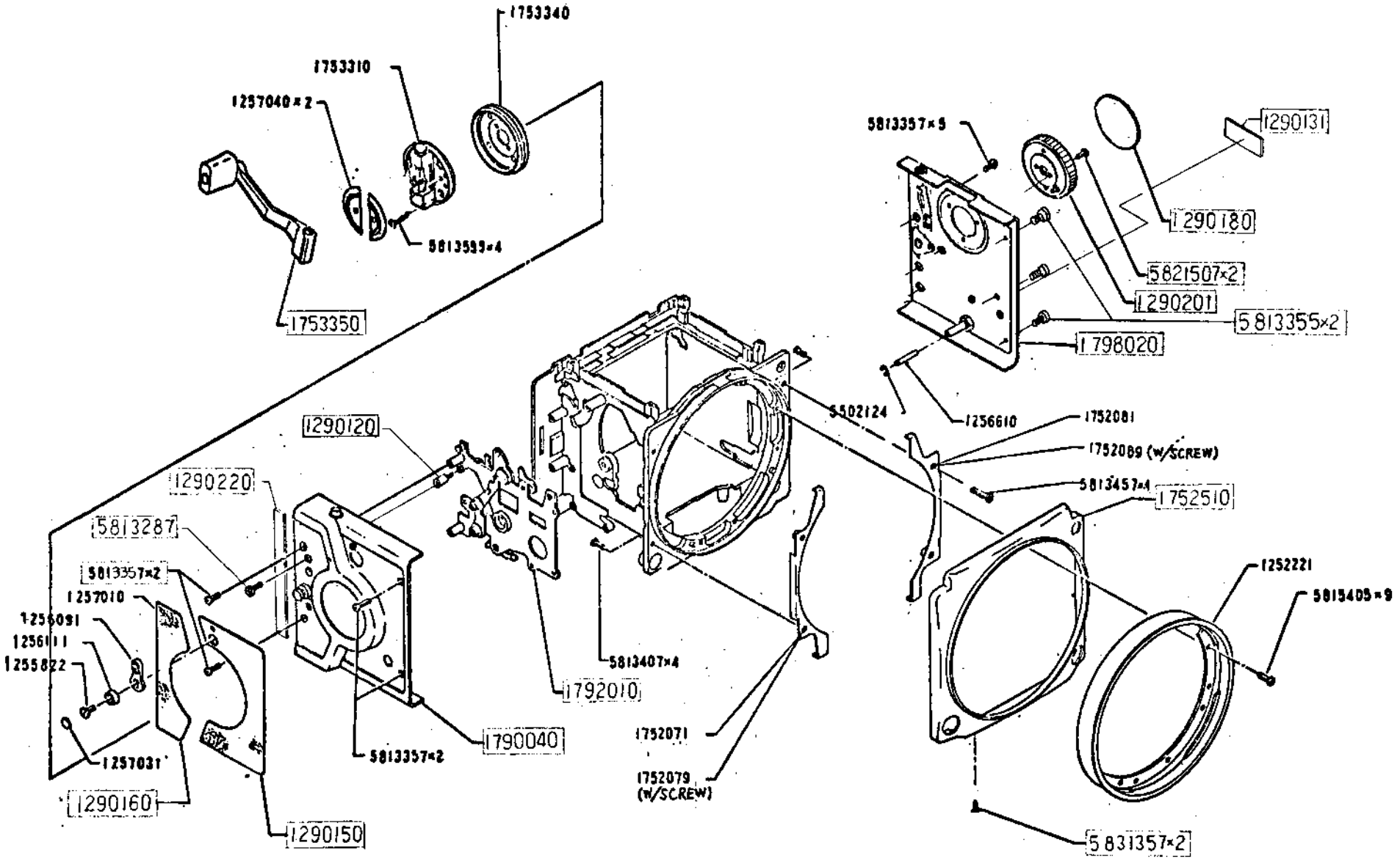
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5813357×5
1290131
1290180
5821507×2
1290201
5813355×2
1798020
5502124
1256610
1752081
1752089 (W/SCREW)
5813457×4
1752510
1252221
5815405×9
5813357×5
1290120
1290220
5813287
5813357×2
1257010
1256091
1256111
1255822
1257031
1290160
1290150
1790040
5813357×2
5813407×4
1792010
1752071
1752079
(W/SCREW)

1. Composition

   1) Contents

   2) Manual

   3) Tools for repair

2. Contents

   1) The contents are mostly the same as those of ETR, and only items are described. As the page-numbers of ETR Repair Manual are described, please refer to them.

   2) Repairing methods on the Item 1.3.22 are the same as those of ETR, however, some parts are different. To help you check them, the page-numbers of ETR-C Parts Lists are described for your reference.

   3) The Item 14.30 is greatly different from that of ETR, thus it is not described in ETR Repair Manual, and page-numbers of ETR-C Repair Manual and those of ETR-C Parts Lists are described for your reference.

   4) Item 20 does not correspond to ETR-C, also, the connecting plate 2 is described only in exploded view of ETR-C Parts Lists.

3. Manual

   Refer to 2-3).

4. Tools for repair

   Description is made for the tools used specifically for ETR-C, and also, positions and methods for their use are listed.

   Refer to ETR Repair Manual for other tools.

CONTENTS

	Item	ETR Repair Manual	ETR-C Repair Manual	ETR-C Parts Lists
1	Right external cover	1	Same as in ETR	8
2	Crank shaft is liable to come off. Does not come off.	2	"	
3	No crank-winding - Poor movement of winding auxiliary plate -	3	"	7
4	No stoppage of crank-winding - Winding-stoppage lever spring came off -	4	"	
5	Much "play" of crank - Main axis stopper-screw is loose -	5	"	
6	No winding - Crack of winding intermediate gear -	6	"	
7	No depressing of S-button - Wrong position of reverse-checking pawl -	6	"	
8	Stiff winding - Loose connecting gear-stopper -	7	"	
9	F-releasing plate and winding plate	8	"	
10	No mirror charge - Wrong bending of M-set lever and S-latch -	9	"	
11	No opening of shutter-blades - Weak power of Mr-operating plate -	10	"	
12	Adjustment of eccentric collar	10	"	
13	No opening of S-blades - Stiff rotation of operating ring -	10	"	
14	Mounting of left outside-cover - Rise of S-dial ring -	—	4	8
15	S-speed becomes 1/500 sec.	13	Same as in ETR	
16	Position of shutter-scale ring and S-dial click	13	"	
17	How to dismount the lens	14	"	
18	No dismounting of lens - No depressing of setscrew with on and off-operating plate -	15	"	

	Item	ETR Repair Manual	ETR-C Repair Manual	ETR-C Parts Lists
19	No winding - No return of bottom-releasing bar in hitting the bottom-cover -	16	Same as in ETR	
20	No connection of back - Connecting pawl is loose -	17	—	
21	No operation of AE - Wrong M switch set -	18	Same as in ETR	
22	No mounting of finder-hood - Connecting spring is bent -	19	"	6
23	Adjustment of finder screw-focus	20	"	
24	Mirror douser	21	"	
25	Replacement of mirror	22	"	
26	Mirror-frame and 45° adjustment	23	"	
27	Finder hood	24	"	
28	Wiring diagram I (ETR-C has no old S-circuit)		"	
29	Wiring diagram II	26	Same as in ETR	
30	Adjustment of F-releasing stroke	—	5	5 & 9
1	Film holder	31 ∿ 37	Same as in ETR	
2	Connecting plate	38 ∿ 40	——	9
3	75mm F2.8	41 ∿ 43	Same as in ETR	
4	Tools for repair	—	6	

14. Mounting of left outside cover
— Rise of S-dial ring, wrong stopper of S-dial ring —

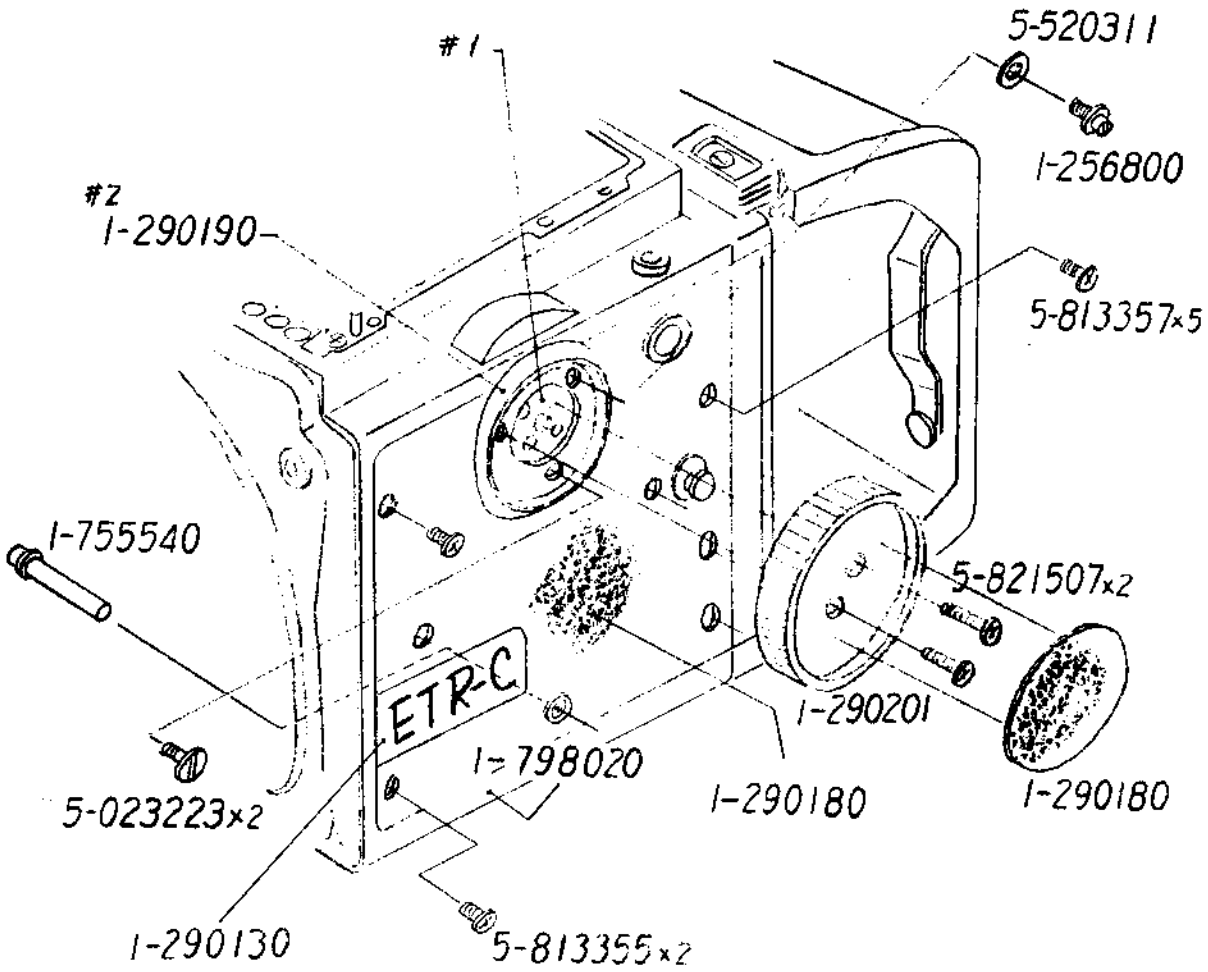
1) Never forget the cable release pin (10755540).

2) Among 3 setscrews on lens-side, 2 setscrews on top and bottom are in the earth-circuit, thus use electroplated screws.

3) For the rise of S-dial, set #2 and S-dial scale-ring (#1) concentrically.

4) Wrong stopper of S-dial

Set the washer (5-52-311) to 1-256800, and if it still does not stop, replace 1-290201.



30. Adjustment, confirmation on F-release stroke

1) How to dismount the back connecting plate

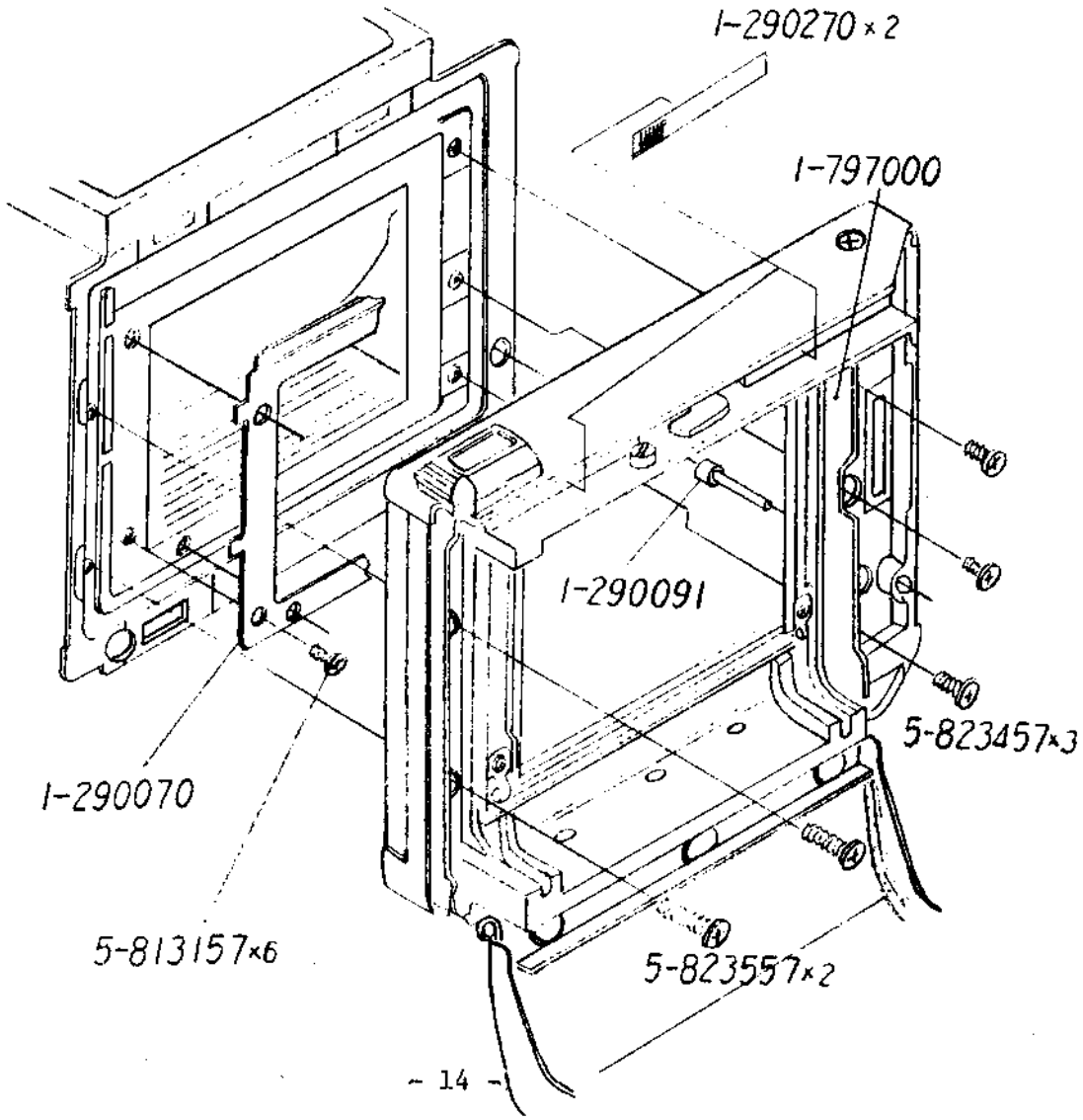
Dismount the small screws (5-823557 × 2, 5-823457 × 3) clamping the connecting plate, in this state, do not take up the connecting plate immediately. Turn the lens-mount side of the body upward, and separate it from the connecting plate by holding the body-side upward. If the connecting plate is dismounted while the lens-mount side is kept downward, the F-releasing pin (1-290091) may fall down and enter into the body-side.
Similarly, to connect, put the body after putting F-releasing pin into F-releasing sleeve on the side of connecting plate. Otherwise, F-releasing pin may fall into the body and the camera would not work.

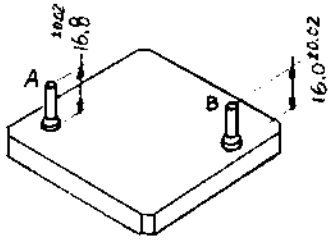
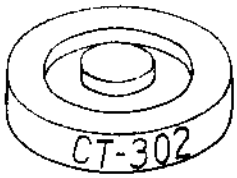
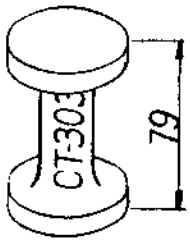
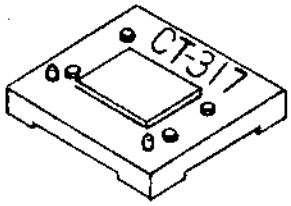
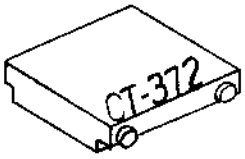
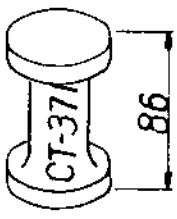
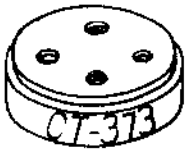
Be sure the above is observed.
Next, dismount the back douser (1-290070).

2) By the use of CT-341A F-releasing stroke check gauge (special use for ETR-C), check F-releasing stroke check. Refer to page 6.

a) In case of abnormal..... refer to page 8 of ETR Repair Manual

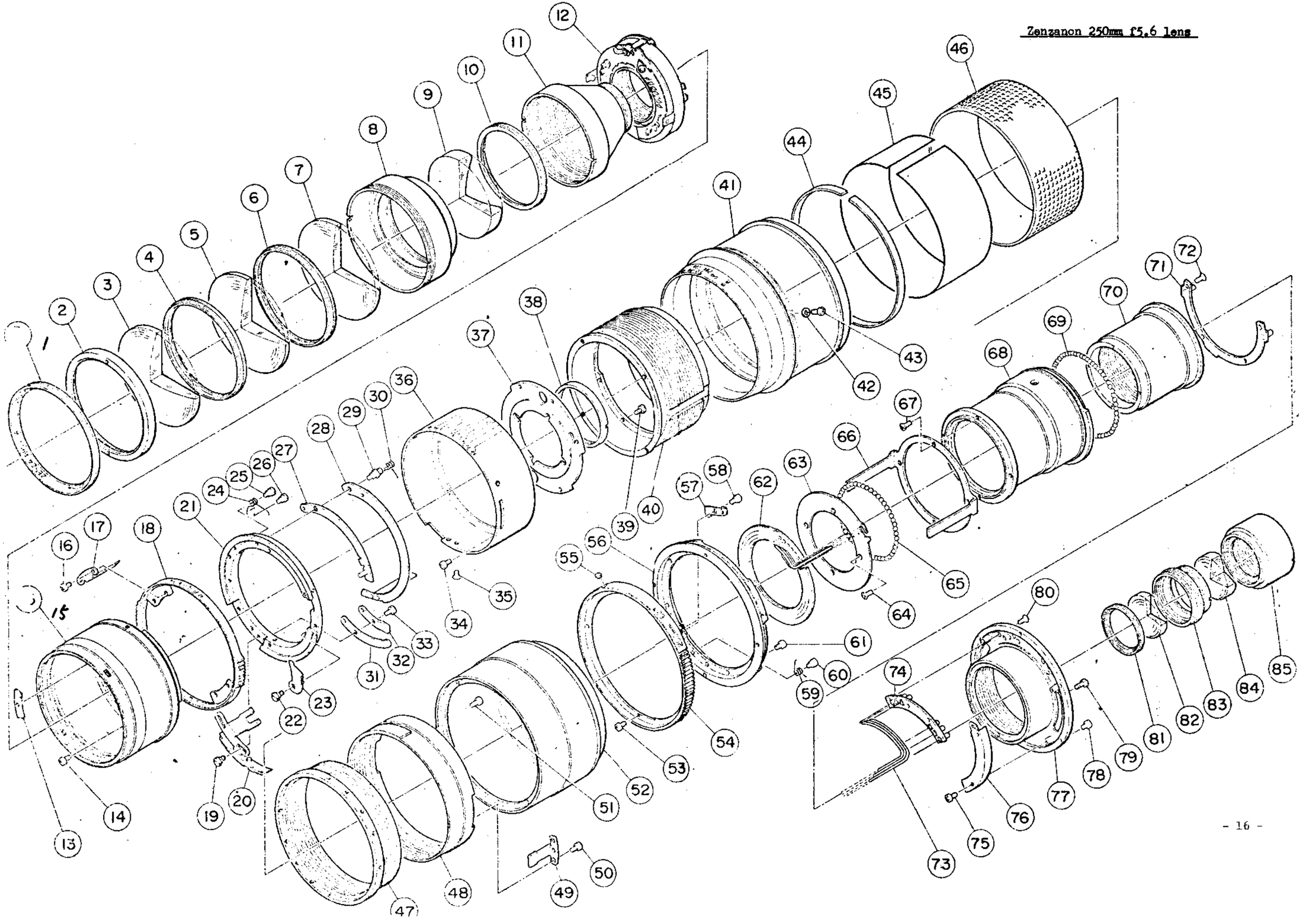
b) In case of normal
Check the Film Holder... refer to page 35 of ETR Repair Manual



Jig No.	Rough sketch	How to use
CT-341A F-releasing stroke check-gauge		Dismount the back connecting plate, and put the body from the upside so that both pins A and B of the jig enter into the holes of the body in which F-releasing sleeve of the connecting plate is to be inserted. In this case, set the multi-lever vertically. Refer to P.2. 1. Check with A (longer one) Shutter should be released with incomplete winding. 2. Check with B (shorter one) Shutter should not be released without complete winding.
CT-302 303 317 Jigs for mechanical measurement	  	1-252227 Lens Mount For measuring the mechanism of the body itself. Use the set board and dial guage. Put CT-317, CT-303 and CT-302 together. And set the dial gauge indicator to "0". Take out CT-303, put on the camera-body, and put CT-302, on the mount-part for measurement. And adjust the camera-body. o Rated play of connection shall be within 0.06 on the periphery of CT-302. o Mechanical dimension shall be within 0.03 at the central part of CT-302. CT-302 and CT-303 are the same jigs as those for ETR.
CT-371 372 373 Jigs for mechanical measurement	  	It is used for mechanical measurement with lens-bayonet and back-connecting plate mounted. Use the set board and dial gauge. Put CT-372, CT-371 and CT-373 together, and set the dial gauge indicator to "0". Take out CT-371, put on CT-373 by putting the mount-side of camera body downward. Next, open the rear cover, and measure it by putting CT-372 on the gate-face to check the mechanism of the camera body. o Mechanical dimensions shall be checked by measuring a total of 5 points, namely, 1 point at the center and 4 points at corners of the jig of CT-372.

ETR/ZENZANON 250 mm Lens

Parts Lists & Repair Manual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1148 (F5.6/250mm)

Index	Parts No.	Parts Name	Q'ty
1	1148-14	Name ring	1
2	1148- 2	Front lens holder	1
3	1148-G1	Lens	1
4	1148- 3	Front lens space ring	1
5	1148-G1	Lens	1
6	1148- 3	Front lens space ring	1
7	1148-G1	Lens	1
8	1148- 1	Front lens frame	1
9	1148-G2	Lens	1
10	1148- 4	Middle lens holder	1
11	1148- 5	Middle frame	1
12	819	Shutter	1
13	1144-39	Limit plate	1
14	1PM1.7 x 4	Pan-head small screw	4
15	1148-12	Filter ring	1
16	3PM1.7 x 3	Pan-head small screw	4
17	1144-38	Diaphragm fork	2
18	1148-13	Aperture ring	1
19	1144-34	T lever axis	2
20	1144-32	T change-over fork	1
21	1144-16	Relay ring	1
22	1144-31	Manual lever axis	1
23	1144-30	Manual lever	1
24	1144-26	Opening spring	1
25	1144-24	Spring axis	1
26	1144-24	Spring axis	1
27	1144-17	Lever	1
28	1144-20	C lever	1
29	1144-23	Lever axis	1
30	1144-27	Auxiliary spring	1
31	1148-28	Lever base plate	1
32	1144-29	Lever holding plate	1
33	3PM1.7 x 4	Pan-head small screw	2
34	1PM1.7 x 4	Pan-head small screw	4

Index	Parts No.	Parts Name	Q'ty
35	1FM1.7 x 3.5	Pan-head small screw	3
36	1148-11	Depth of field scale ring	1
37	1147- 7	Shutter printed circuit board	1
38	1144-15	Shutter clamp ring	1
39	1PM1.7 x 3.5	Pan-head small screw	6
40	1147- 8	Helicoid male	1
41	1148- 9	Distance ring	1
42	1144-11	Washer	3
43	1PM1.7 x 3.5	Pan-head small screw	3
44	1144-12	Cover plate	1
45	1148-22	Tape	1
46	1148-10	Rubber knurling ring	1
47	1147- 9	Helicoid female	1
48	1147-10	Master screw	1
49	1147-11	Key	1
50	1PM1.7 x 3.5	Pan-head small screw	6
51	1PM1.7 x 5	Pan-head small screw	4
52	1148-15	Connecting ring	1
53	1PM1.4 x 3	Pan-head small screw	4
54	1148-20	Bayonet ring	1
55	1144-43	Bayonet ring index	1
56	1144-41	Bayonet	1
57	1144-48	Set ring lock plate	1
58	1144-49	Lock palte axis	1
59	1144-51	Lock leaf spring	1
60	1144-50	Spring holding screw	1
61	1PM1.7 x 3.5	Pan-head small screw	4
62	1144-52	Flexible printed circuit board	2
63	1147-23	Ball holder	1
64	1FM1.7 x 3.5	Pan-head small screw	4
65	1101-49	Steel ball	83
66	1148-19	Set ring plate	1
67	1FM1.7 x 3.5	Pan-head small screw	4
68	1148-18	Set ring	1

Index	Parts No.	Parts Name	Q'ty
69	1101-49	Steel ball	91
70	1148-17	Set ring holder	1
71	1147-24	Set ring knock plate	1
72	1FM1.7 x 3	Pan-head small screw	4
73	1148-21	Lead wire	1
74	1144-54	Contact piece insulating plate	1
75	3PM1.4 x 2	Pan-head small screw	4
76	1147-31	Light-tight plate	2
77	1148-16	Set ring base plate	1
78	1PM1.7 x 3	Pan-head small screw	6
79	1RM1.7 x 4	Pan-head small screw	4
80	B.T1M1.7 x 3	Countersunk small screw	4
81	1148- 7	Rear-middle lens holder	1
82	1148-G3	Lens	1
83	1148- 6	Rear lens frame	1
84	1148-G4	Lens	1
85	1148- 8	Rear lens holder	1

Zenzanon 250mm f5.6 lens shutter unit replacing procedure

[Step 1]

Remove the name ring (2) with a name ring mounting jig (1).

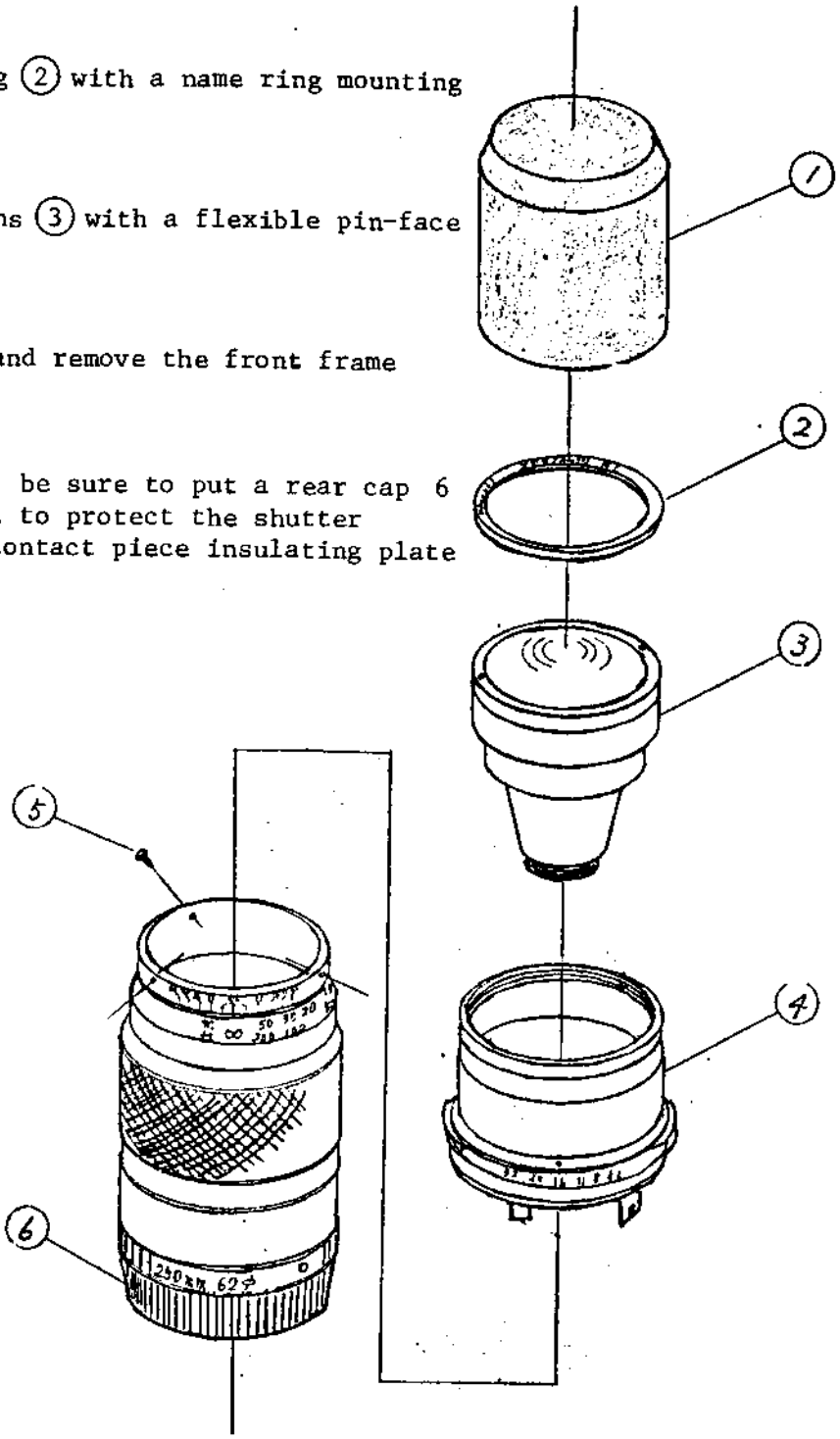
[Step 2]

Remove the front lens (3) with a flexible pin-face wrench.

[Step 3]

Remove 3 screws (5) and remove the front frame unit (4).

Note: At this time, be sure to put a rear cap 6 over the unit to protect the shutter contact and contact piece insulating plate from damage.



6	1-242602	Rear Cap
5	1FM1.7 x 3.5	Countersunk small screw
4		Front frame unit
3		Front lens
2	1148-14	Name ring
1	1-210482-AJ	Name ring mounting jig

[Step 4]

After removing 6 screws (1), remove the set ring unit (2).

[Step 5]

Remove 4 screws (4), and remove (5).

[Step 6]

Remove the rear lens (6).

[Step 7]

Remove solder connecting the shutter cord and flexible printed circuit board (3).

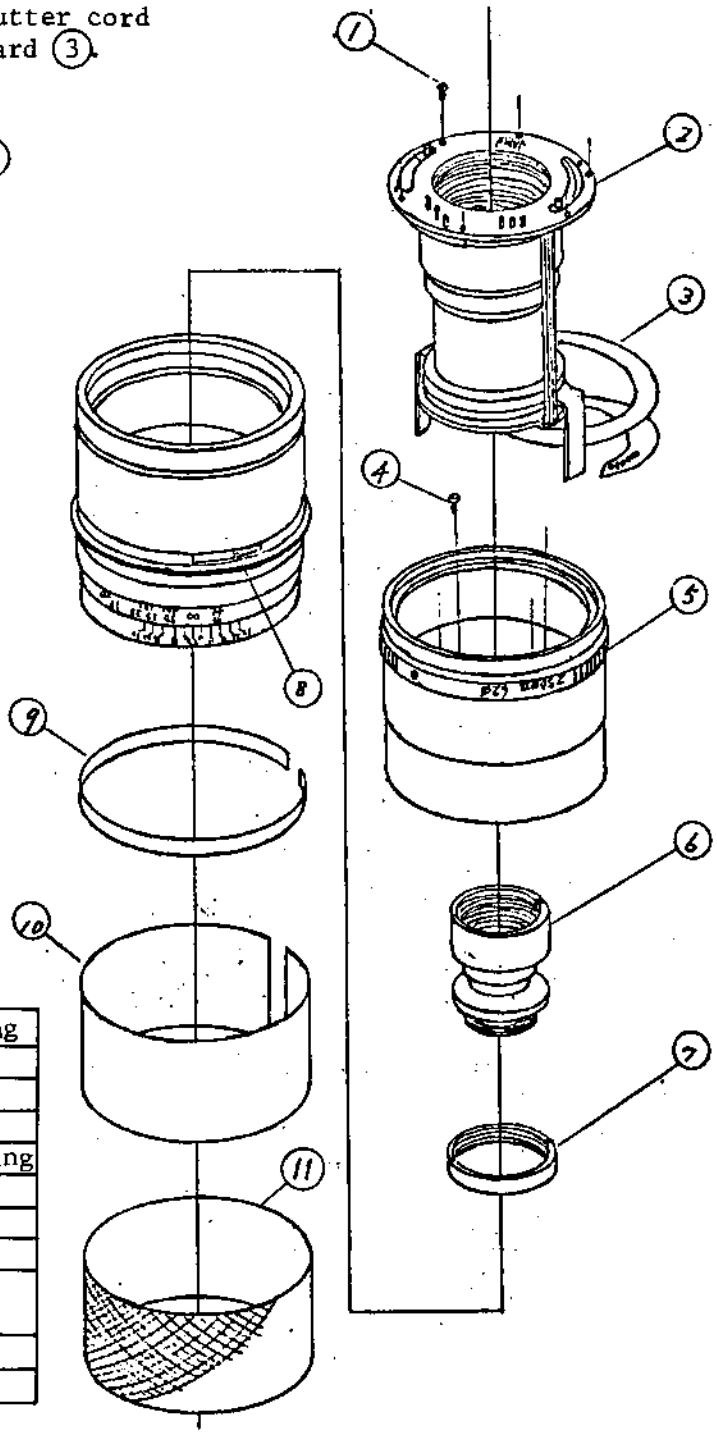
[Step 8]

Loosen the shutter clamp ring (7) and take the shutter out and replace it.

[Step 9]

After replacing a shutter, check the unit if it properly assembled. If it is deviated partly, remove the rubber knurling ring (11), tape (10) and cover plate (9).
After that, loosen screws (8) and perform mechanical focus adjustment of the unit.
Upon completion of adjustment, tighten those screws securely.

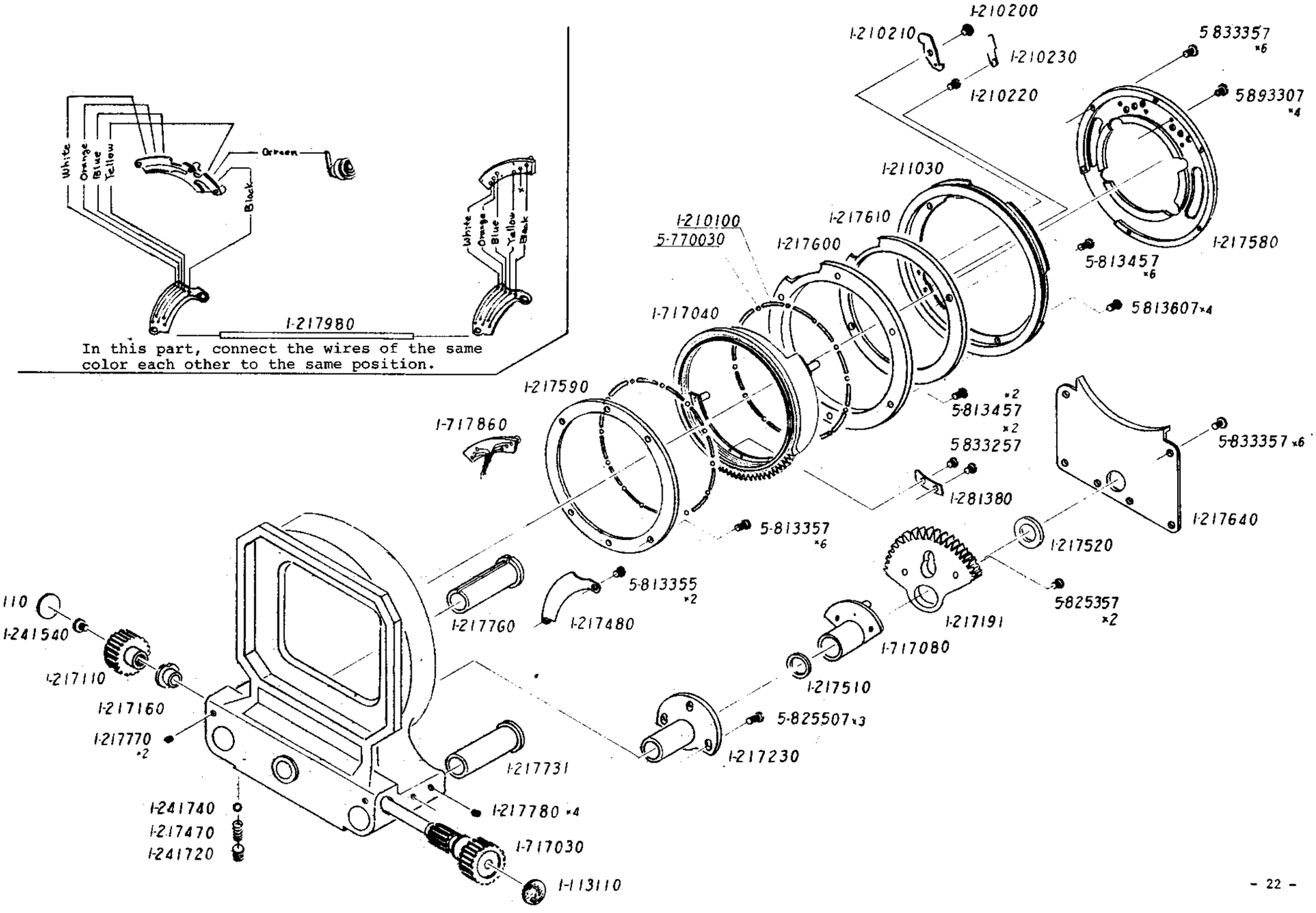
Note: Assembly of shutter unit can be accompoished by performing the above steps in reverse order.

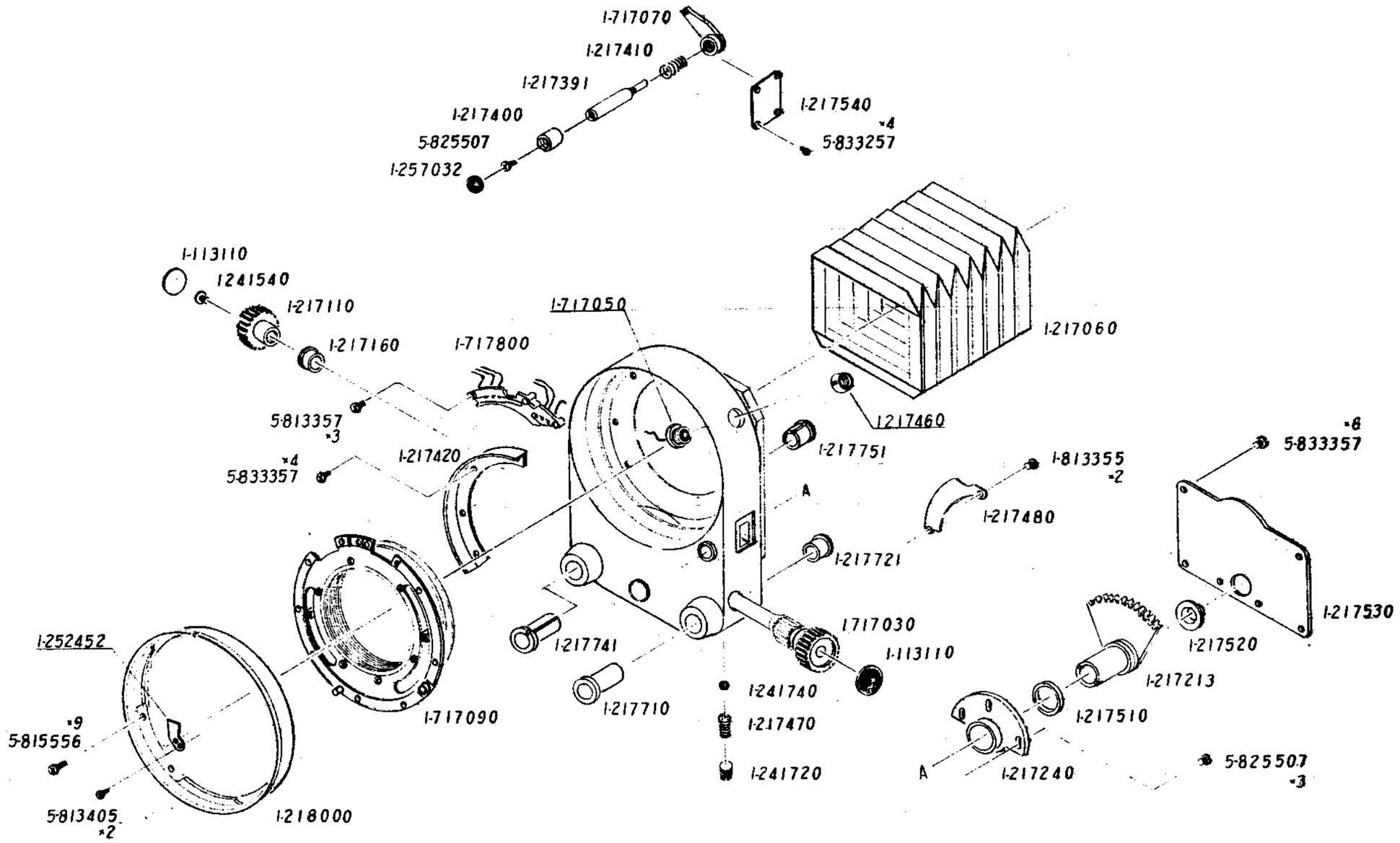


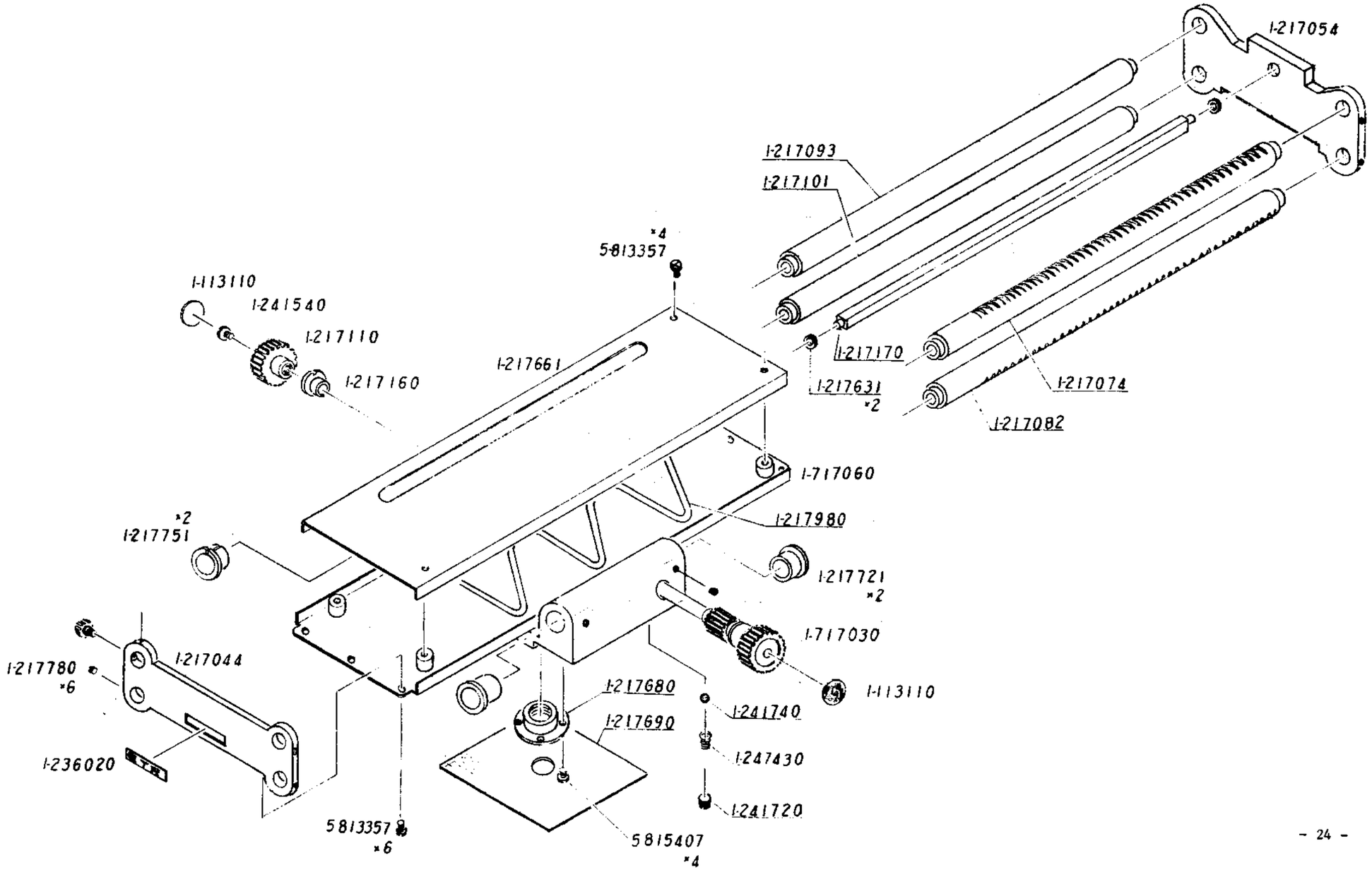
11	1148-10	Rubber knurl ring
10	1148-22	Tape
9	1144-12	Cover plate
8	1PM1.7x3.5	Screw
7	1144-15	Shutter clamp ring
6		Rear lens
5		
4	1PM1.7x5	Screw
3	1-710490	Flexible printed circuit board
2		Set ring unit
1	BT1M1.7x3	Screw

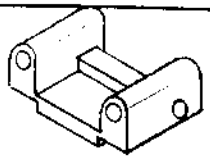
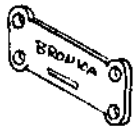
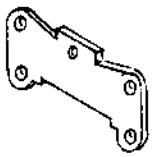
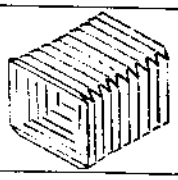
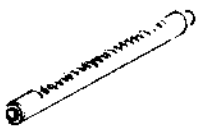
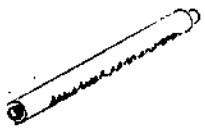
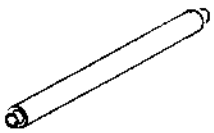
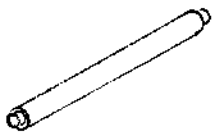
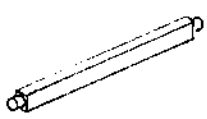
Auto Bellow-E

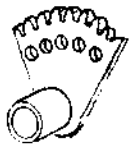
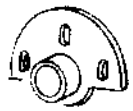
Parts List & Repair Manual

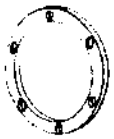
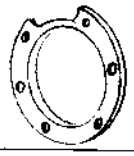
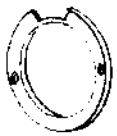
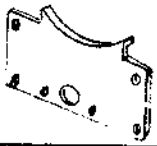

White
Orange
Blue
Yellow
Green
Black
1-217980
In this part, connect the wires of the same color each other to the same position.
1-210200
1-210210
1-210230
1-210220
5833357 ×6
5893307 ×4
1-211030
1-210100
5-770030
1-217610
1-217600
1-217580
5-813457 ×6
1-717040
5813607×4
1-217590
1-717860
5-813457 ×2
5833257 ×2
1-281380
5-833357 ×6
1-217640
5-813357 ×6
1-217520
5-813355 ×2
1-217760
1-217480
1-217191
5825357 ×2
1-717080
1-217510
5-825507×3
1-217230
1-113110
1-241540
1-217110
1-217160
1-217770 ×2
1-217731
1-241740
1-217470
1-241720
1-217780 ×4
1-717030
1-113110

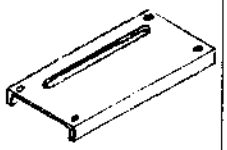
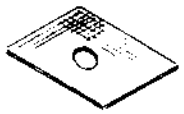
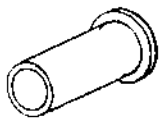
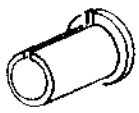
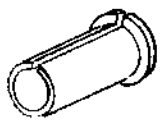

1-717070
1-217410
1-217391
1-217400
5-825507
1-257032
1-217540
*4
5-833257
1-113110
1241540
1-217110
1-217160
5-813357
*3
*4
5-833357
1-717800
1-717050
1-217060
1-217460
1-217751
1-217420
A
1-813355
*2
1-217480
1-217721
*6
5-833357
1-217530
1-217520
1-217213
1-217510
1717030
1-113110
1-241740
1-217470
1-241720
1-217741
1-217710
1-717090
1-252452
*9
5-815556
5-813405
*2
1-218000
A
1-217240
5-825507
*3


1-217054
1-217093
1-217101
*4
5-813357
1-113110
1-241540
1-217110
1-217160
1-217661
1-217170
1-217631
*2
1-217074
1-217082
1-717060
1-217980
*2
1-217751
1-217721
*2
1-717030
1-113110
1-217044
1-217780
*6
1-217680
1-217690
1-241740
1-247430
1-241720
1-236020
5813357
*6
5815407
*4

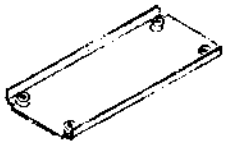
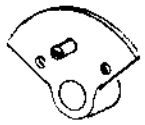
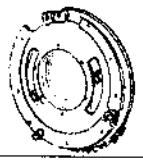
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-217032	Tripod plate (socket) 三脚台						
217044	Limit plate (front) 制限板(前)						
217054	Limit plate (rear) 制限板(後)						
217060	Bellows 蛇腹						
217074	Rack axis (top) ラック軸(上)						
217082	Rack axis (bottom) ラック軸(下)						
217093	Guide axis (top) 案内軸(上)						
217101	Guide axis (bottom) 案内軸(下)						
217113	Clamp knob クランプノブ		3				
217160	Adjusting collar (right) 調整カラー(右)		3				
217170	Operating axis 作動軸						

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-217191	Charge gear B チャージ歯車B						
217213	Charge gear D チャージ歯車D						
217230	Charge gear B bearing 歯車B軸受						
217240	Charge gear D bearing 歯車D軸受						
217391	Release button axis 着脱ボタン軸						
217400	Release button 着脱ボタン						
217410	Release button spring 着脱ボタンスプリング						
217420	Cord cover コードカバー						
217460	Synchrosocket nut B シンクロソケットナットB						
217470	Friction spring B フリクションバネB		2				
217480	Connection base plate 接続基板		2				

Parts No. 部品番号	Name 名称	Shape 形状	Pcsper Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-217490	Cord-fixing plate コード固定板		2				
217510	Gear B collar 歯車Bカラー	t=1.5	2				Adj. 1-218030
217520	Gear-retaining collar 歯車押えカラー		2				
217530	Gear D cover 歯車D蓋						
217540	Release button cover 着脱ボタン蓋						
217580	Rear plate 後板						
21759C	Gear A holder 歯車A受						
217600	Gear A guide ring 歯車Aガイド環						
217610	Gear A ring 歯車A押え環						
217631	Operating axis collar 作動軸カラー		2				
217640	Gear B cover 歯車B蓋						

Parts No. 部品番号	Name 名称	Shape 形状	Pcs.per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-217661	Cord housing cover コード格納蓋						
217680	Tripod socket 三脚ネジ						
217690	Tripod rubber 三脚ゴム						
217710	Rack axis sleeve A ラック軸スリーブ A						
217721	Rack axis sleeve B ラック軸スリーブ B		3				
217731	Rack axis sleeve C ラック軸スリーブ C						
217741	Guide axis sleeve A 案内軸スリーブ A						
217751	Guide axis sleeve B 案内軸スリーブ B		3				
217762	Guide axis sleeve C 案内軸スリーブ C						
217770	M 1.7 (small screw) M1.7 ビス		10				
217780	M 2 (small screw) M2 ビス		18				

Parts No. 部品番号	Name 名称	Shape 形状	Pcs.per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-217980	Connecting cord 接続用コード						
217990	Cord tube コードチューブ		2				
218000	Lens mount レンズマウント						
218030	Gear B collar (for adjustment) 歯車Bカラー(調整用)	t=1.0	(2)				

Parts No. 部品番号	Name 名称	Shape 形状	Pcs.per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-717030	Movable knob set 可動ノブセット		3				
717040	Charging gear A チャージ歯車A						
717050	Synchrosocket シンクロソケット						
717060	Housing box 格納箱						
717070	Release lever 着脱レバー						
717080	Charging gear B axis チャージ歯車B軸						
717090	Charging gear C set チャージ歯車Cセット						

1. Forward and backward movements are stiff (I)

Stiff rotation of rack axis (1-217082) and pinion

Loosen the set screw (1-217770) fixing the adjusting collar (#1) assembled to the movable knob (1-717030) and also loosen #1, then, if smooth movement is possible, adjust it in the following methods.

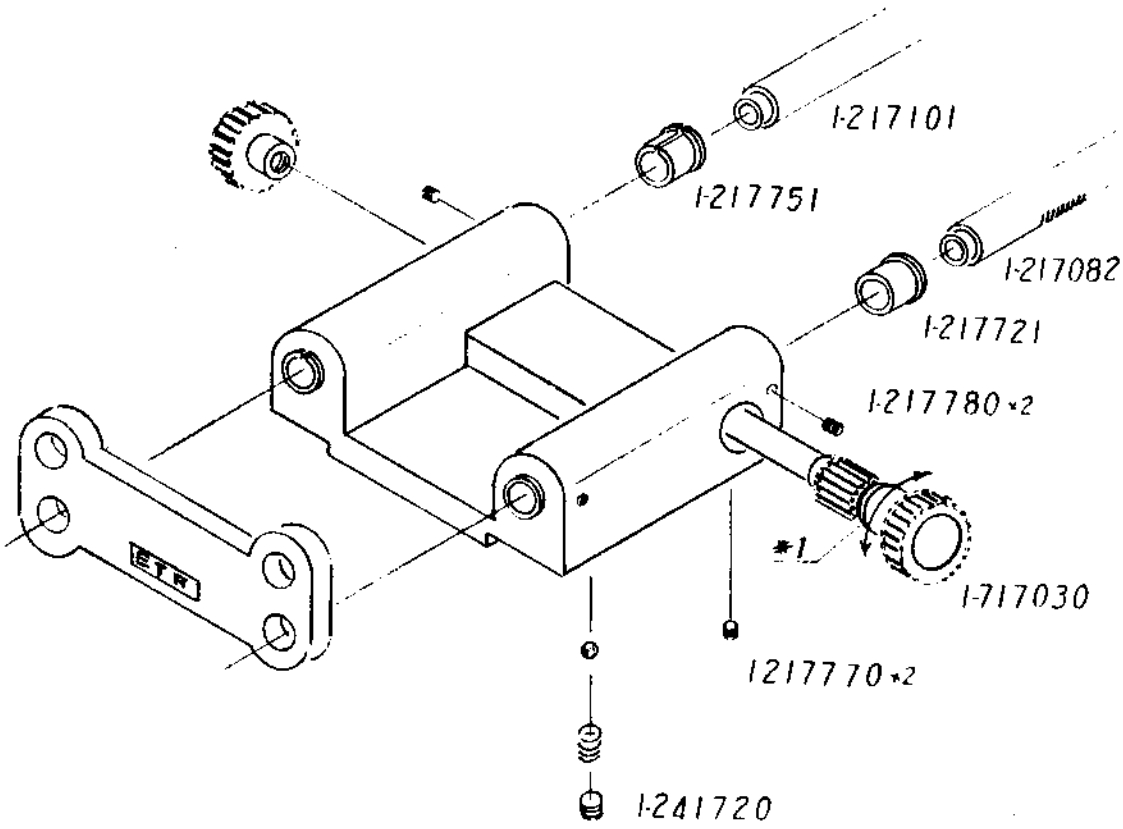
i. The adjusting collar (#1) has its eccentric radius 0.2mm between the internal and external diameter, thus rotate #1 to the smoothly rotating position of the rack axis and pinion in arrow-mark direction, and fix with the set screw.

ii. In order to give some proper friction to the movable knob, adjust and control the screwing degree of the screw (1-241720).

Stiff movement of guide axis (1-217101) or rack axis

Fix the rack axis sleeve B (10217721) with the set screw (1-217780). There is a slit in the guide axis sleeve B (1-217751), and put this part upside, then fix it to a position of smooth movement by adjusting the clamping degree of the set screw.

Make the similar adjustment for the main bodh of lens-side and that of the body-side.



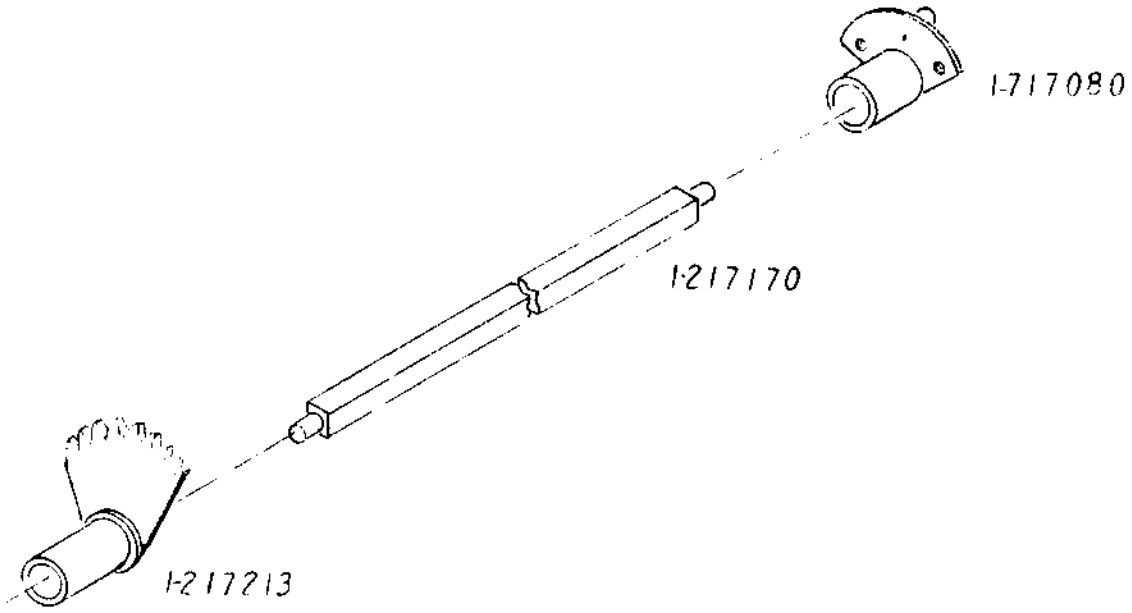
2. Forward and backward movements are stiff (II)

When the movement is especially stiff in a state of camera-setting and winding-up position, there may be friction between the operating axis (1-217170) and charge gear B axis (1-717080) and the charge gear D (1-217213).

i. Apply a high performance-lubricant on the surface of the operating axis.

Lubricant designated by Bronica: Biral VG Spray

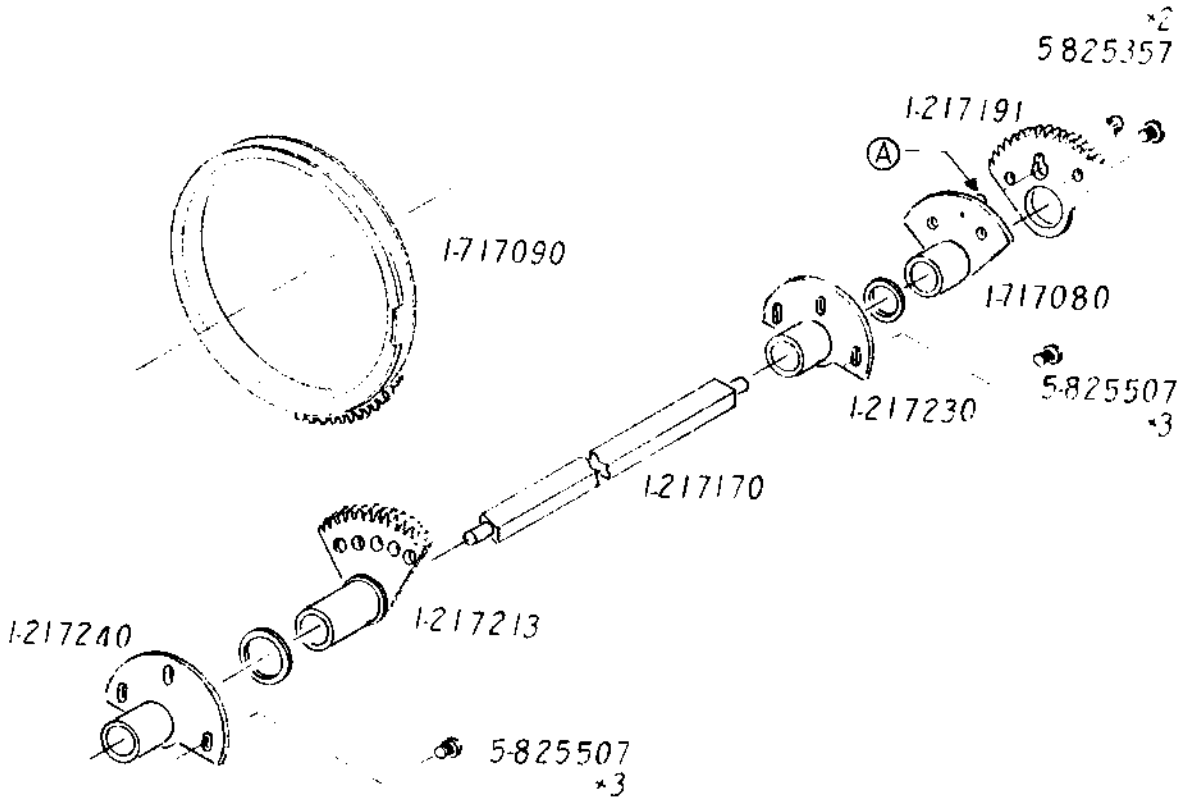
Biral Lubricants Norway A/S



3. Control of winding range

Engagement between the charge gear C(1-717090) and charge gear D(1-217213) is done by matching each mark on threading top and bottom. Also, for mounting the gear D bearing (1-217240), fix it with the screw (5-825507)× 3 to leave a little backlash between the gear C and D. The same manner is applied for the gear B bearing (1-217230).

Mount the testing instrument of winding range (CT-321) on the lens-mount, and fix it with the screw (5-825357)× 2 by rotating A pin of the charge gear B axis (1-717080) and the gear B (1-217191) in order to obtain the stipulated range in winding. For the test-instument (T-321), refer to the tool-list ETR Repair Manual.



Zenza BRONICA ETR

PARTS LISTS
&
REPAIR MANUALS

ZENZA BRONICA IND., INC.

Zenza BRONICA®

ETR Acc'y

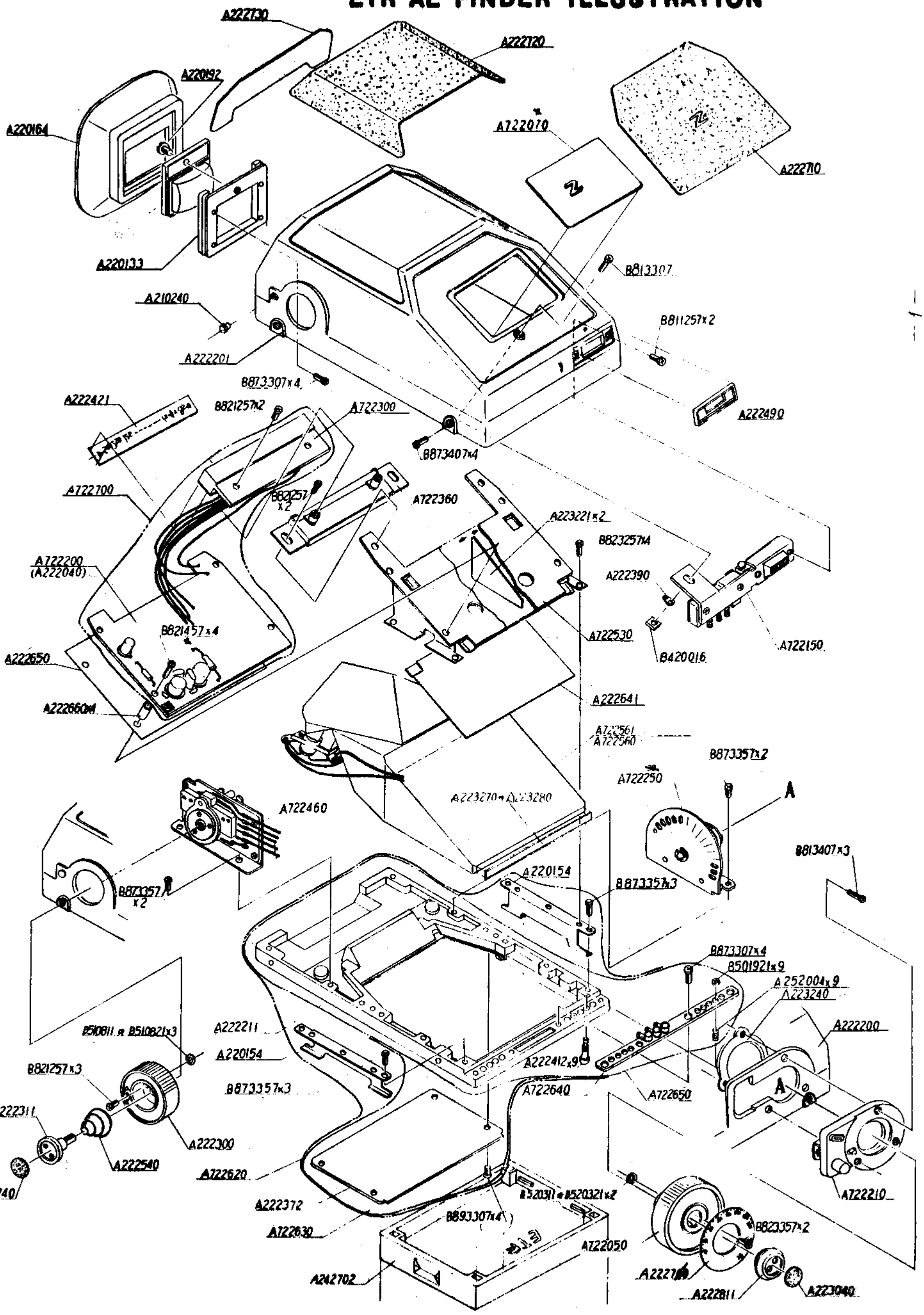
Parts Lists

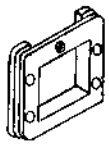
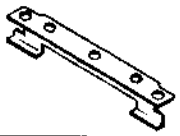
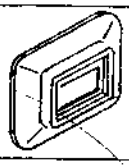
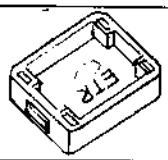
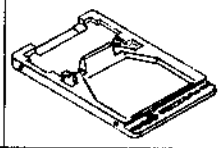
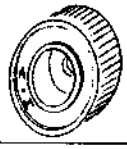
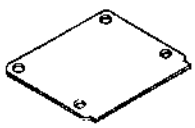
1. AE finder (Revised) ..... 1.
2. Prism view finder ..... 8.
3. Sports finder ..... 11.
4. Rotary view finder ..... 15.
5. Lens hood ..... 20.
6. Professional lens hood ..... 21.
7. Extension tube E-14 ..... 26.
8. Extension tube E-28 ..... 31.
9. Extension tube E-42 ..... 36.

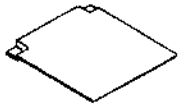
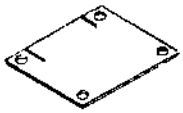
Note : Please place AE finder spare parts order by this revised AE finder parts list, and discard old version of AE finder parts list.

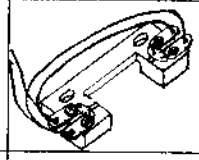
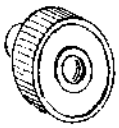
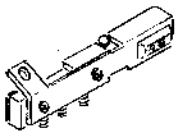
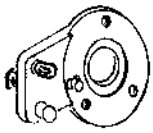
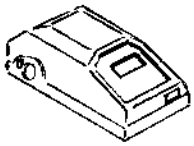
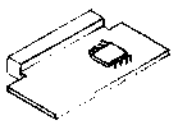
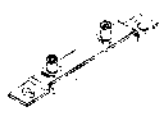
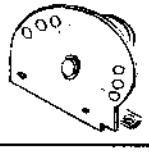
Printed in Japan

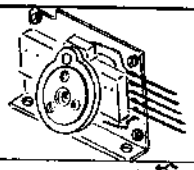
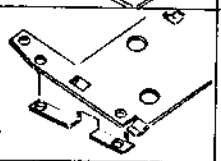
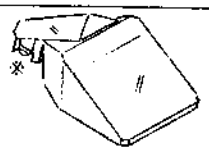
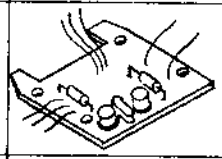
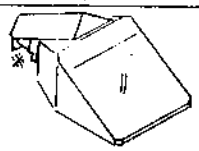
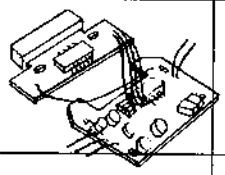
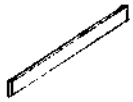
ETR AE FINDER ILLUSTRATION



Parts No. 部品番号	Name 名称	Shape 形状	Posper Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
A220133	Eye piece frame 接眼マスク					17	
A220154	Attacning metal 接続ル		2			18	
A220164	Eye cup A アイカップA					30	
A220191	Eye piece unit attaching screw 接眼止ネジ					12	
A210240	Selector dial mark バヨネット環指標					5	
A242702	Bottom cover ファインダー底カバー					15	
A222211	AE finder base plate AEファインダーベース					85	
A222300	AE selector dial AE切換ダイアル					240	
A222311	AE selector lock button AE切換ロックボタン					55	
A222372	AE button cover AEベース底板					62	
A222390	AE cntact piece AEフグ板					2	

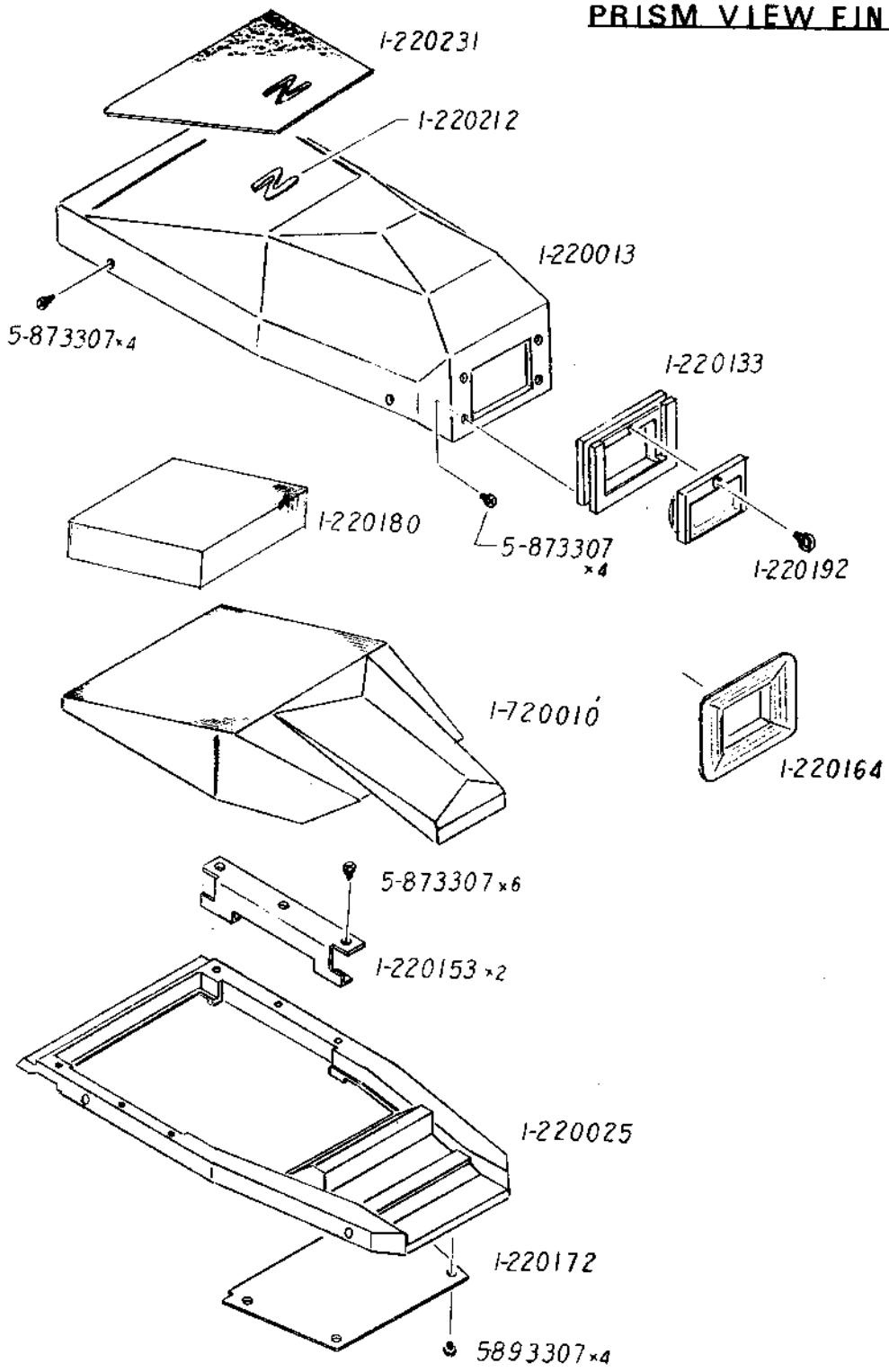
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
A222412	AE contact pin AE接点ピン		9			54	
A222490	Display button outer frame 表示ボタン外枠					20	
A222540	Lock button spring AE切換ロックボタンばね					5	
A222641	Prism holder プリズム押え板					24	
A222650	Insulating sheet AE回路絶縁シール					8	
A222660	Main circuit pillar AE回路スペーサー		4			3	
A222710	Leatherette (Front) AEカバー前部革					15	
A222720	Leatherette (Upper) AEカバー 上部革					17	
A222730	Leatherette (Rear) AEカバー後部革					14	
A222740	Leatherette (Selector lock button) AE切換ボタン革					3	
A222811	ASA dial unit attaching screw ASAダイアルネジ					56	

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
A223040	Leatherette (ASA dial unit attaching screw) ASAボタン革					3	
A252004	Contact pin spring コネクターバネ		9			3	
A722710	SPC set (w/wire) ピンボーヒット(前)					920	
A722070	Cover 調整カバー					45	
A722050	ASA dial unit ASAダイアルユニット					500	
A722150	Display button unit 表示ボタンユニット					180	
A722210	ASA lock button unit ASAロックボタンユニット					110	
A222201	AE top cover AEファインダーカバー					1,200	
A722300	Display circuit 表示基板セット					4,640	
A722360	Display prism unit 表示プリズムユニット					1,100	
A722250	ASA base plate unit ASAベース板ユニット					770	

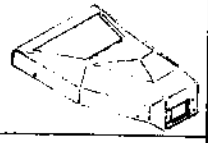
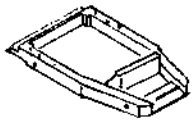
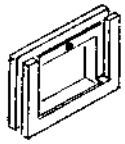
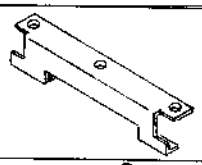
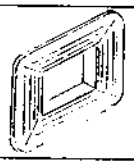
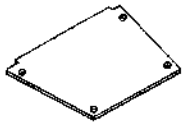
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
A722460	AE selector unit AE切換ユニット					490	
A722530	AE prism holder unit AEプリズム押えユニット					110	
A722560	AE prism set (old) AEプリズムセット (旧)					8,450	(*..w/ recepter lens)
A722640	AE contact pin base plate AE接点台					50	
A722200	Main circuit AE回路基板セット					9,800	
A722561	AE prism set (new) AEプリズムセット (新)					8,200	(.w/o recepter lens)
A722700	Main circuit (w/display circuit) AE回路基板ユニット (新)					14,500	
A222421	AE display print AE表示プリント					75	
A223221	Prism hold spacer プリズム押エスペーサー		2			5	
A223270 A223280	AEP spacer I, II (adjustment) AEPスペーサーI, II					3	
A222760	ASA display plate ASA文字板					25	

Parts No. 部品番号	Name 名称	Shape 形状	Pcs.per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
A223240	ASA lock button plate 指標板取付ネジ					10	

PRISM VIEW FINDER



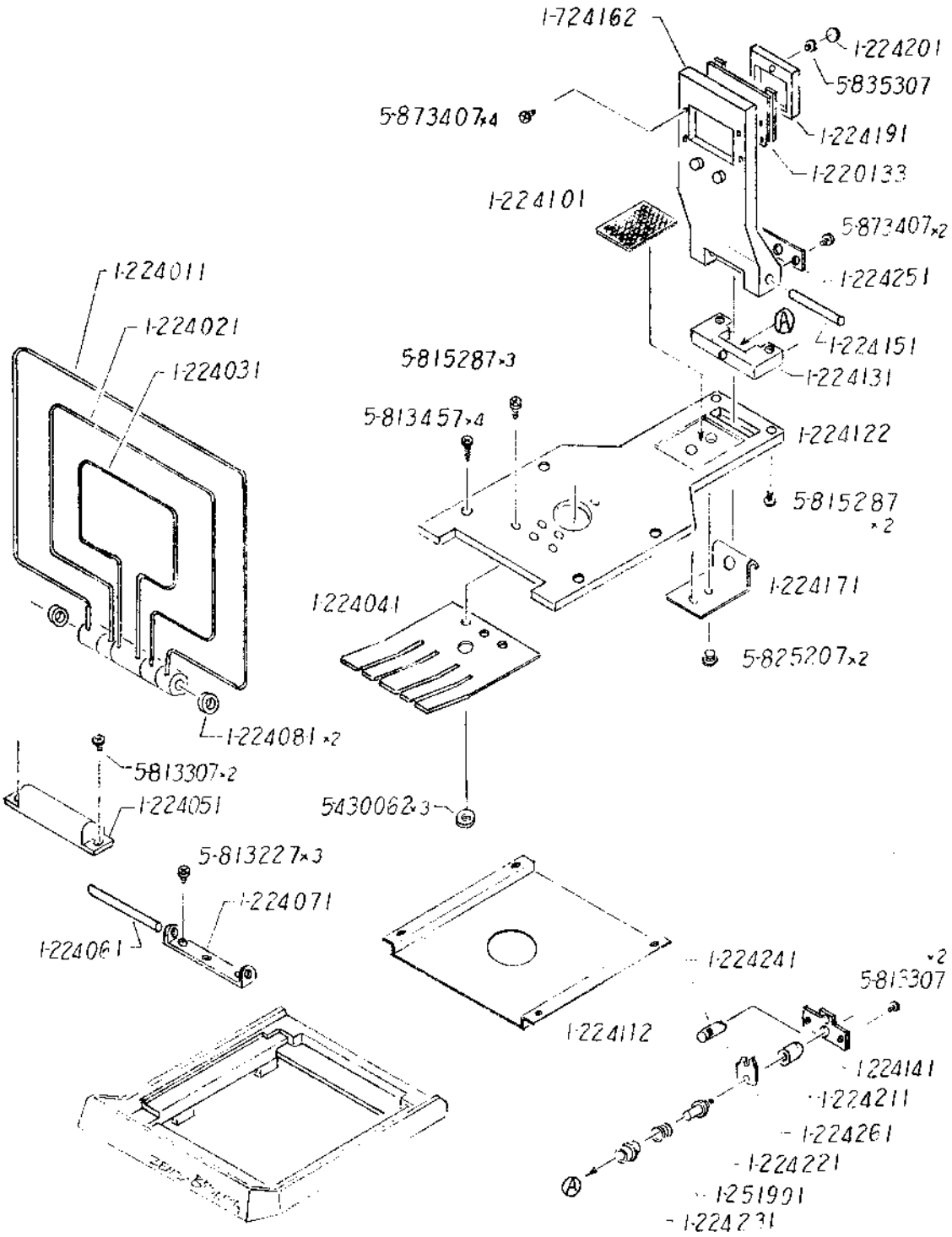
ZENZA BRONICA ETR | Prism view finder

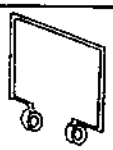
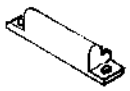
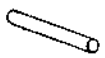
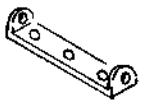
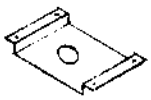
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1220012	Finder cover ファインダーカバー						
0025	Finder base plate ファインダーベース						
0132	Eye-piece mask 接眼マスク						
0153	Attaching metal 接続金		2				
0164	Eye cup A アイカップ A						
0172	Bottom cover ベース底板						
0192	Eye-piece unit attaching screw 接眼取止ネジ						
0212	Z mark Zマークプレート						
0230	Leatherette ファインダー革						
0180	Prism cushion プリズム押え						

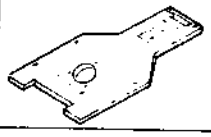
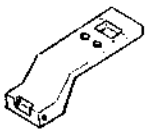
ZENZA BRONICA ETR | Prism view finder

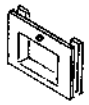
Parts No. 部品番号	Name 名　称	Shape 形　状	Pcs.per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単　価	Remarks 備　考
I-720010	Prism set プリズムセット						

SPORTS FINDER E

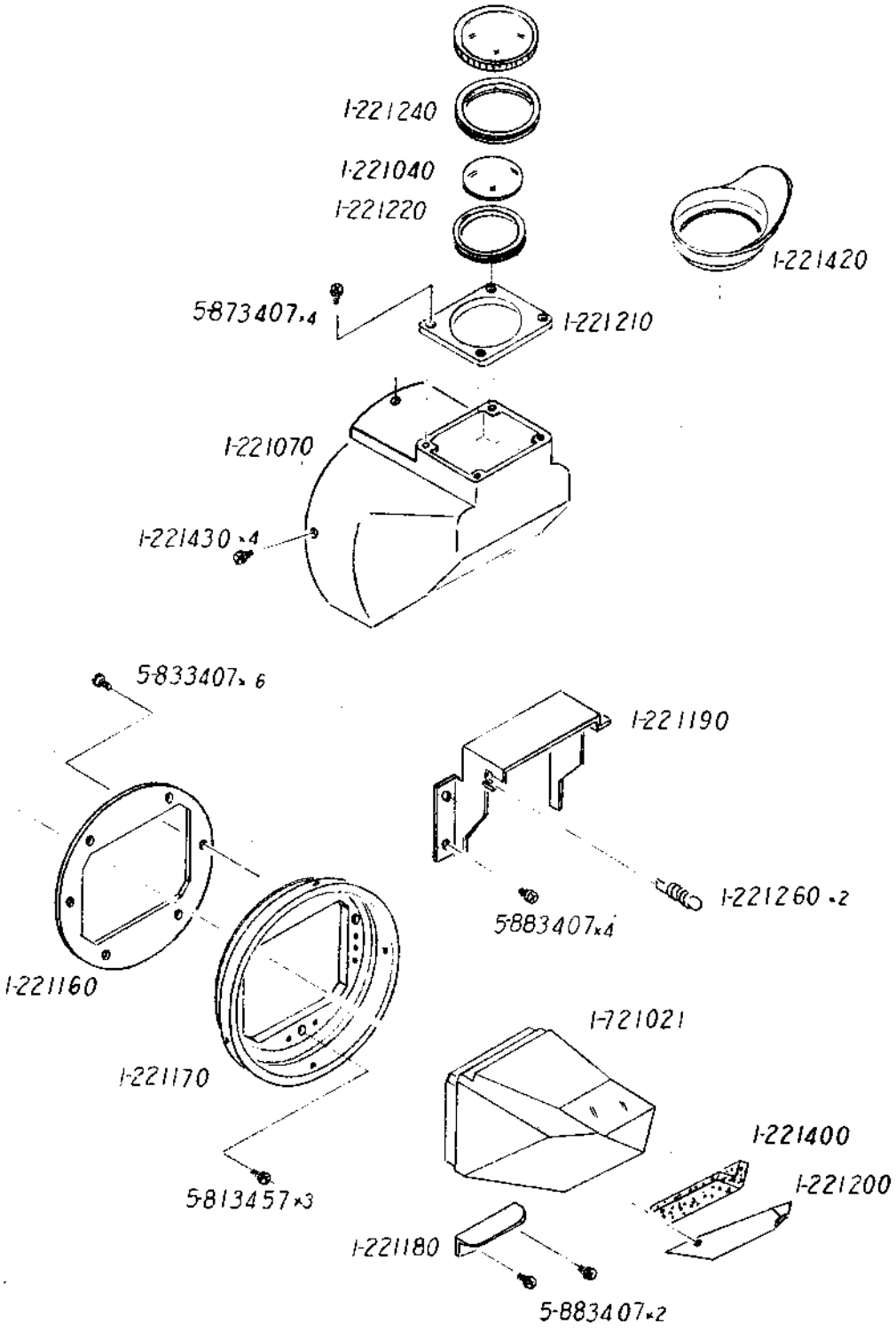


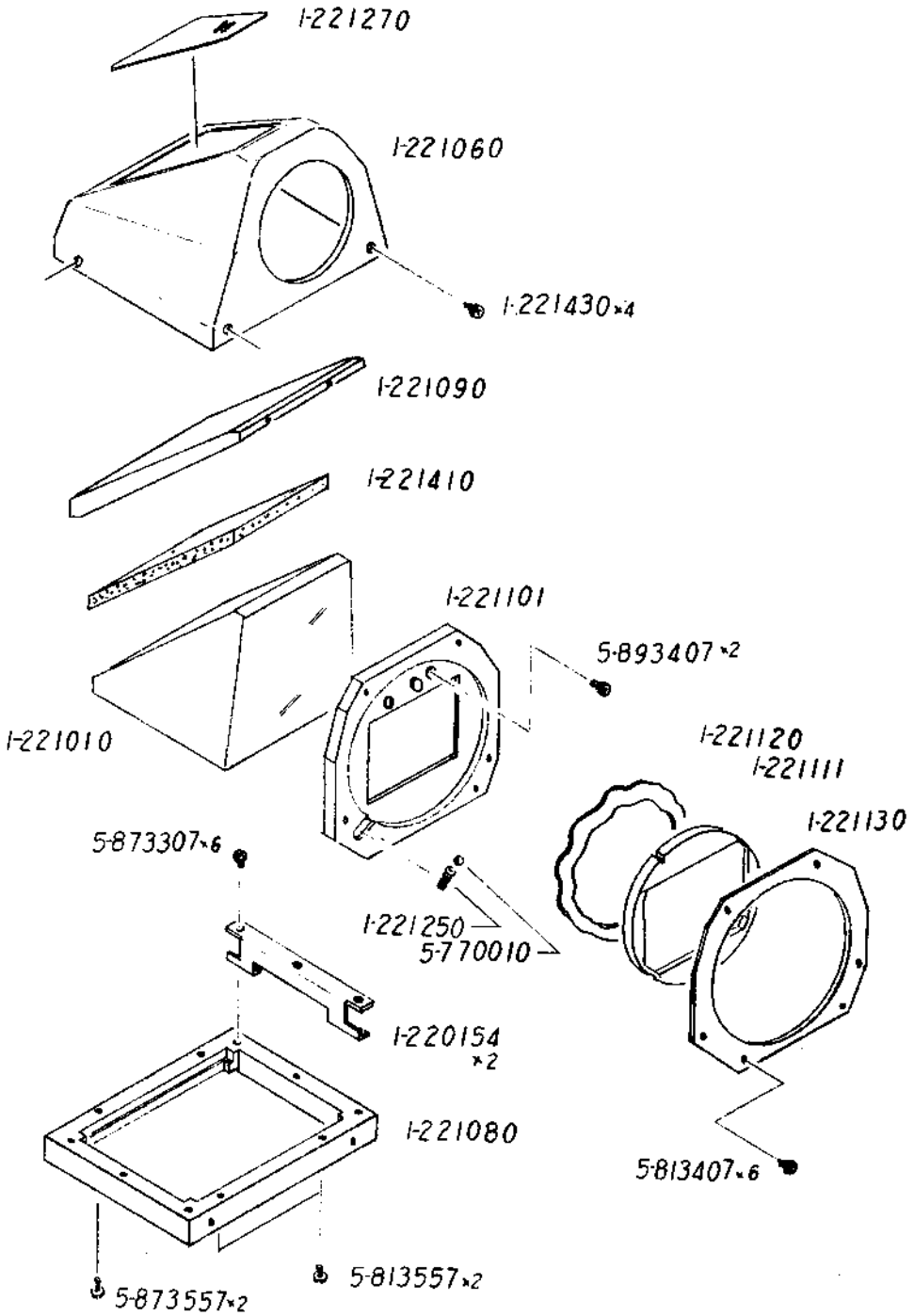
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
I-224011	Large frame フレーム(大)						
4021	Middle frame フレーム(中)						
4031	Small frame フレーム(小)						
4041	Frame spring フレーム用バネ						
4051	Frame shaft cover フレーム軸カバー						
4061	Frame shaft フレーム軸						
4071	Frame shaft bearing フレーム軸受						
4081	Frame washer フレーム用ワッシャー		2				
4101	Leatherette 上枠用革						
4112	Finder lower plate ファインダー下板						

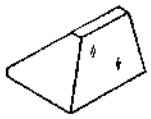
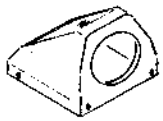
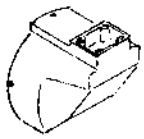
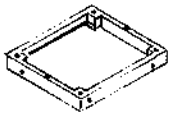
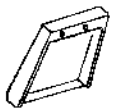
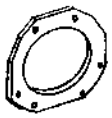
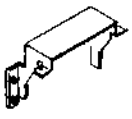
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-224122	Finder upper plate ファインダー上板						
4131	Eye-piece mount A アイピース台 A						
4141	Eye-piece mount B アイピース台 B						
4151	Eye-piece shaft アイピース軸						
1-724162	Eye-piece stand アイピース						
1-224171	Eye-piece stand spring アイピース押バネ						
4191	Eye-piece frame 接眼枠						
4201	Leatherette 接眼布革						
4211	Lock releasing button 解除ボタン						
4221	Lock releasing shaft ロック解除軸						

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (単)価	Remarks 備考
1-224231	Lock releasing shaft sleeve 解除軸スリーブ						
4241	Lock pin ロックピン						
4251	Lock plate ロック板						
4261	Lock releasing plate ロック解除板						
1-220133	Eye-piece mask 接眼マスク						
-251991	Spring バネ						

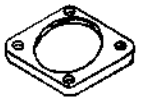
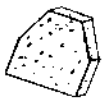
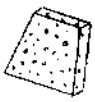
ROTARY FINDER E

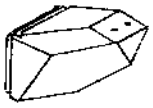
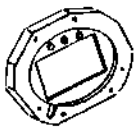
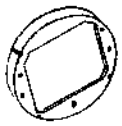



1-221270
1-221060
1-221430×4
1-221090
1-221410
1-221101
5-893407×2
1-221010
1-221120
1-221111
1-221130
5-873307×6
1-221250
5-770010
1-220154
×2
1-221080
5-813407×6
5-873557×2
5-813557×2

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (Y) 単価	Remarks 備考
1-221010	P-1 Prism P1プリズム						
1040	G-1 Eye-piece lens G1レンズ						
1060	Base cover Rベースカバー						
1070	Rotary prism cover Rプリズムカバー						
1080	Base frame ロータリーベース						
1090	P-1 Prism retainer 固定プリズム押え						
1120	Waved washer ウェーブワッシャー						
1130	Rotary plate retainer 回転板押え						
1170	Prism rotary ring ダハプリズム回転台						
1180	Prism bottom holder プリズム保持下板						
1191	Prism top holder プリズム保持下板						

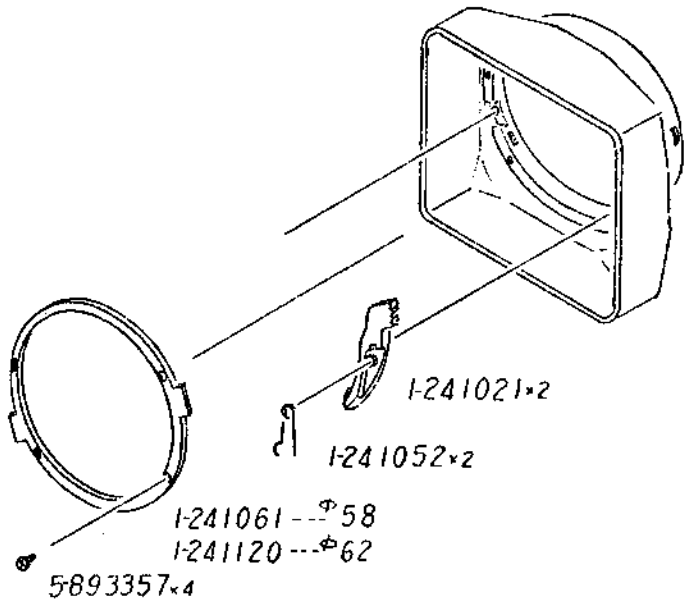
ZENZA BRONICA ETR | Rotary view finder E

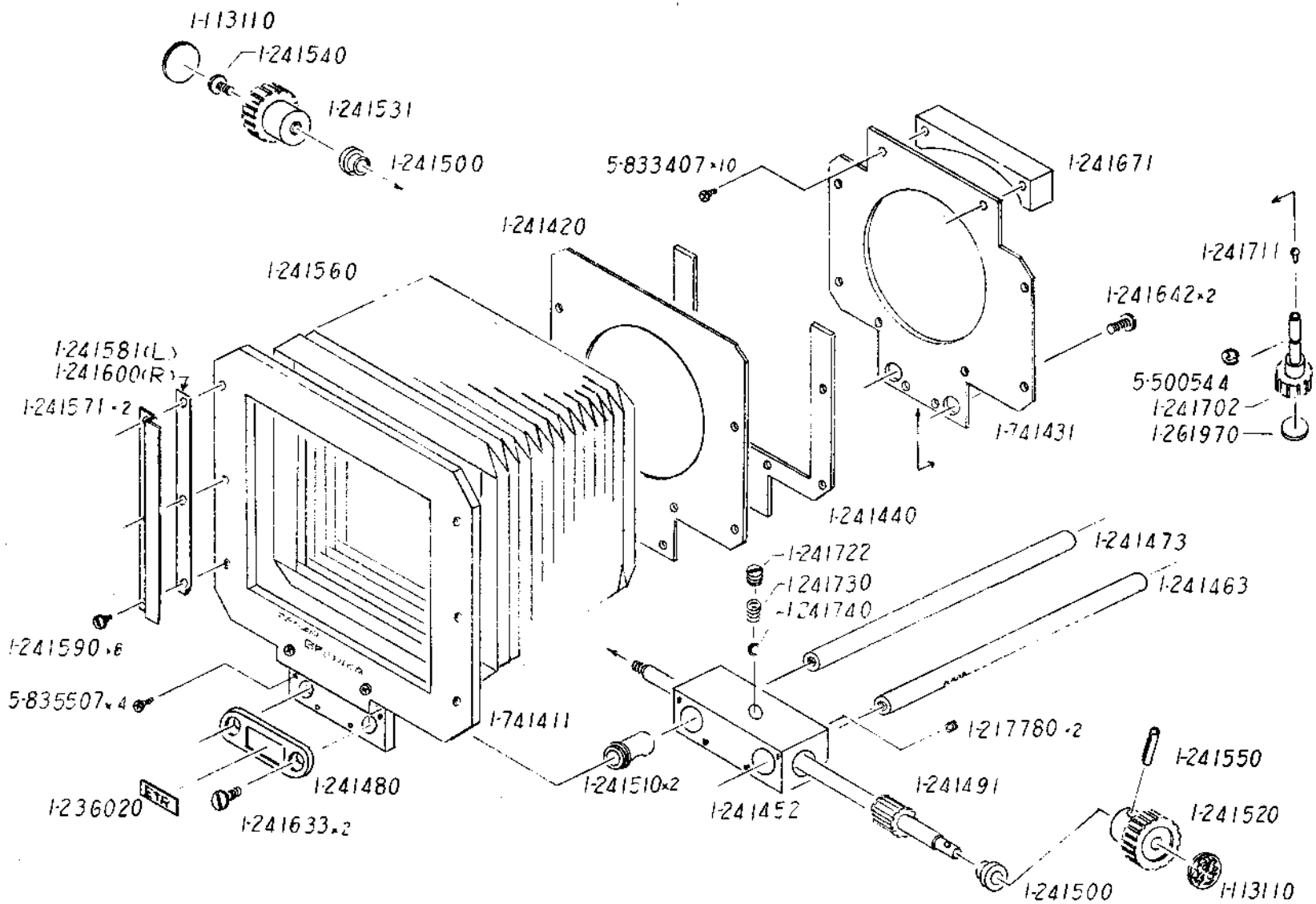
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-221201	Prism retainer ダハプリズム保持板						
1211	Eye-piece base plate 接眼固定板						
1221	G-2 fixing ring G2止めリング						
1240	Eye-piece ring 接眼枠B						
1251	Click spring クリックスプリング						
1260	Prism retainer spring ダハプリズム固定スプリング		2				
1270	Leatherette ベースカバー革						
140	Prism cushion ダハプリズムの押え						
1410	Prism cushion プリズムの押え						
1420	Rubber eye cup アイカップB						
1430	Screw カバー止ネジ		8				

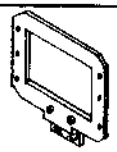
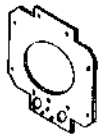
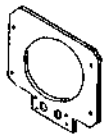
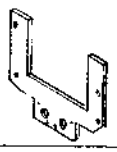
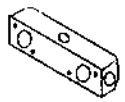
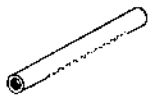
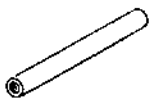
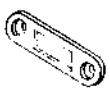
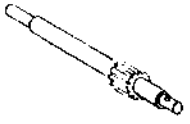
Parts No. 部品番号	Name 名称	Shape 形状	Posper Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-721021	Rotary prism set ロータリーダハプリズムセット						
1030	Rotary base ring 固定台						
1041	Rotary ring 回転台						

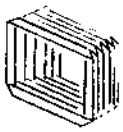
ZENZA BRONICA | STR | Lens Hood

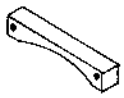
Parts No. 部品番号	Name 名　称	Shape 形　状	Pcs.per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単　価	Remarks 備　考
1021	Lock Lever ロックレバー		2				
1052	Lock lever Spring ロックレバースプリング		2				
1061 1120	Retainer ring 押え環						




1-113110
1-241540
1-241531
1-241500
5-833407×10
1-241671
1-241420
1-241560
1-241711
1-241642×2
1-241581(L)
1-241600(R)
1-241571-2
5-500544
1-241702
1-261970
1-741431
1-241440
1-241722
1-241730
1-241740
1-241473
1-241463
1-241590×6
5-835507×4
1-741411
1-217780-2
1-241550
1-241510×2
1-241452
1-241491
1-241520
1-236020
1-241480
1-241633×2
1-241500
1-113110

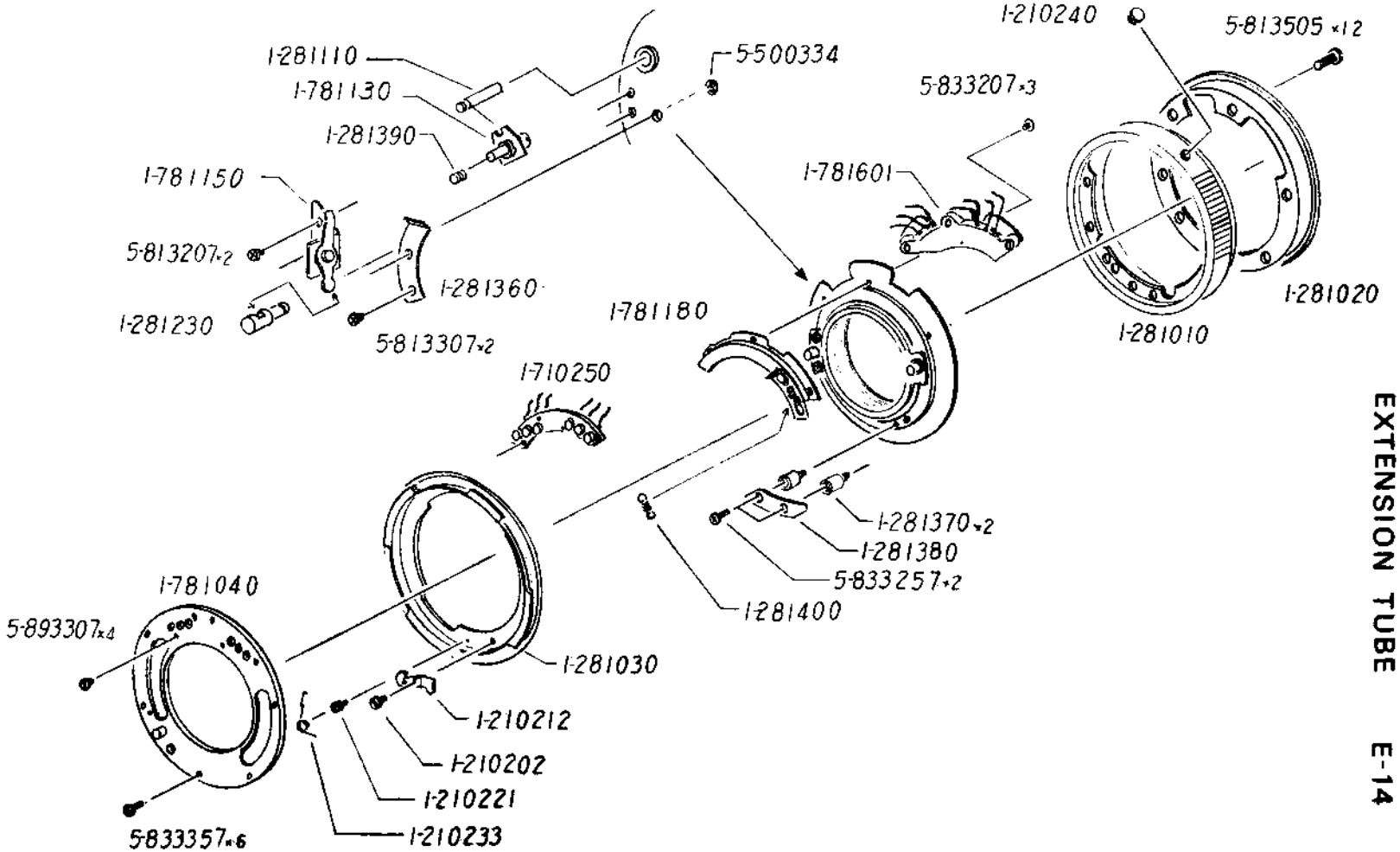
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-741411	Front mask 前板						
1431	Base plate B 基板B						
1-241420	Base plate A 基板A						
1440	Filter rest フィルター枠						
1452	Moving stand 可動台						
1463	Rack ラック						
1473	Guide shaft 案内軸						
1480	Restriction plate 制限板						
1491	Pinion ピニオン						

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-241500	Eccentric collor 偏芯カラー		2				
1510	Moving stand bearing 可動台軸受		2				
1520	Set knob 可動ノブ						
1531	Clamp knob クランプノブ						
1540	Knob stopper ノブストッパー						
1550	Spring pin スプリングピン						
1560	Hood bellow 蛇腹						
1571	Mask guide ガイドレール		2				
1581	Auxiliary plate (left) 補助板(左)						
1590	Screw ガイドレール取付		6				
1600	Auxiliary plate (right) 補助板(右)						

Parts No. 部品番号	Name 名称	Shape 形状	Pcs.per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-241633	Screw		2				
1642	Screw		2				
1671	Adaptor ring groove						
1702	Adaptor fixing ring						
1711	Adaptor ring fixing knob dowel						
1722	Screw						
1730	Friction spring						
1740	Steel ball						

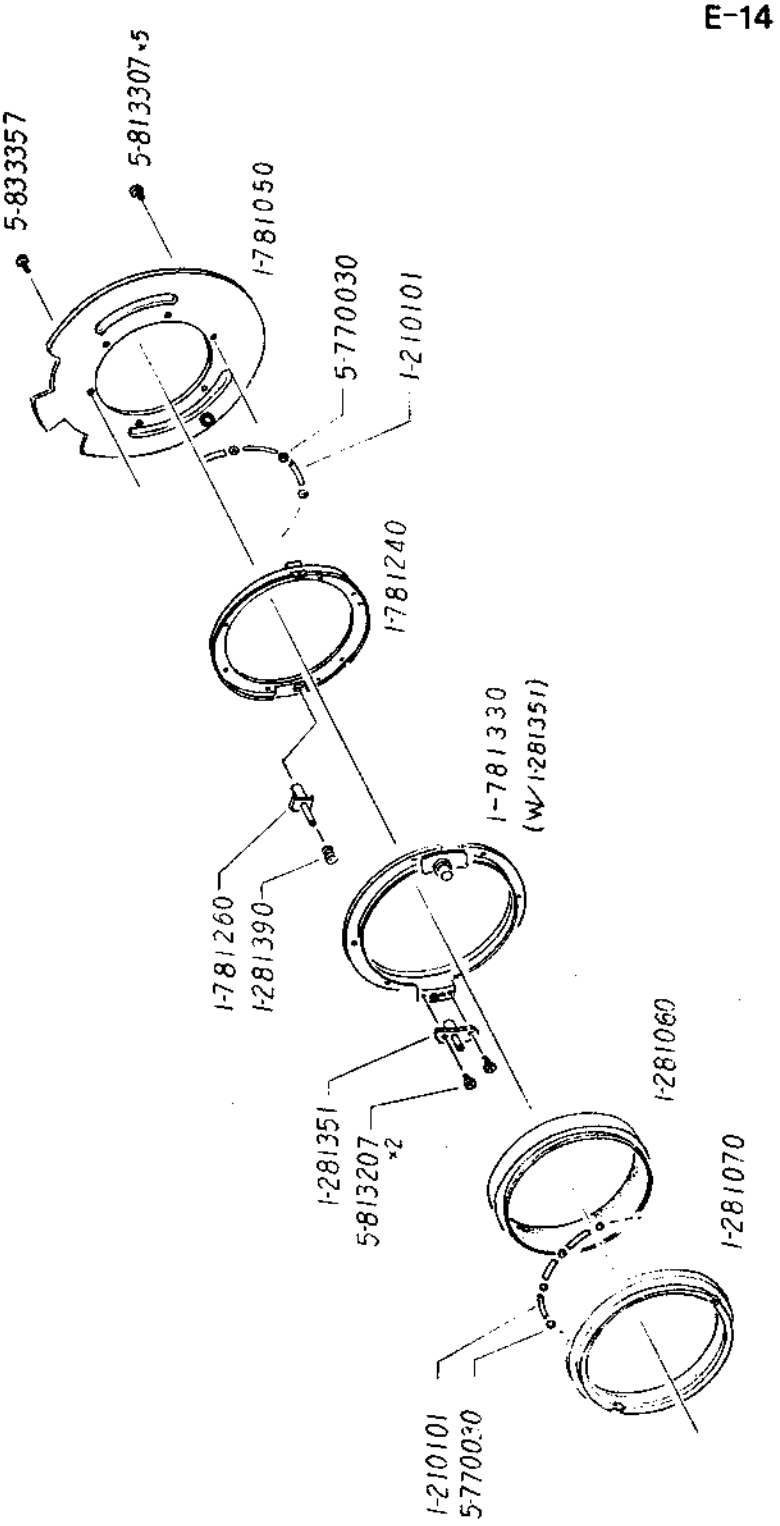
ZENZA BRONICA ETR | Professional lens hood E

Parts No. 部品番号	Name 名称	Shape 形状	Pcs/per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-217780	Set screw M2.6ナベビス		2				
1-113110	Leatherette 革		2				
1-236020	Name plate 文字板						
1-261970	Leatherette 革						



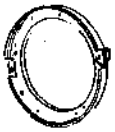
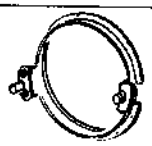
EXTENSION TUBE E-14

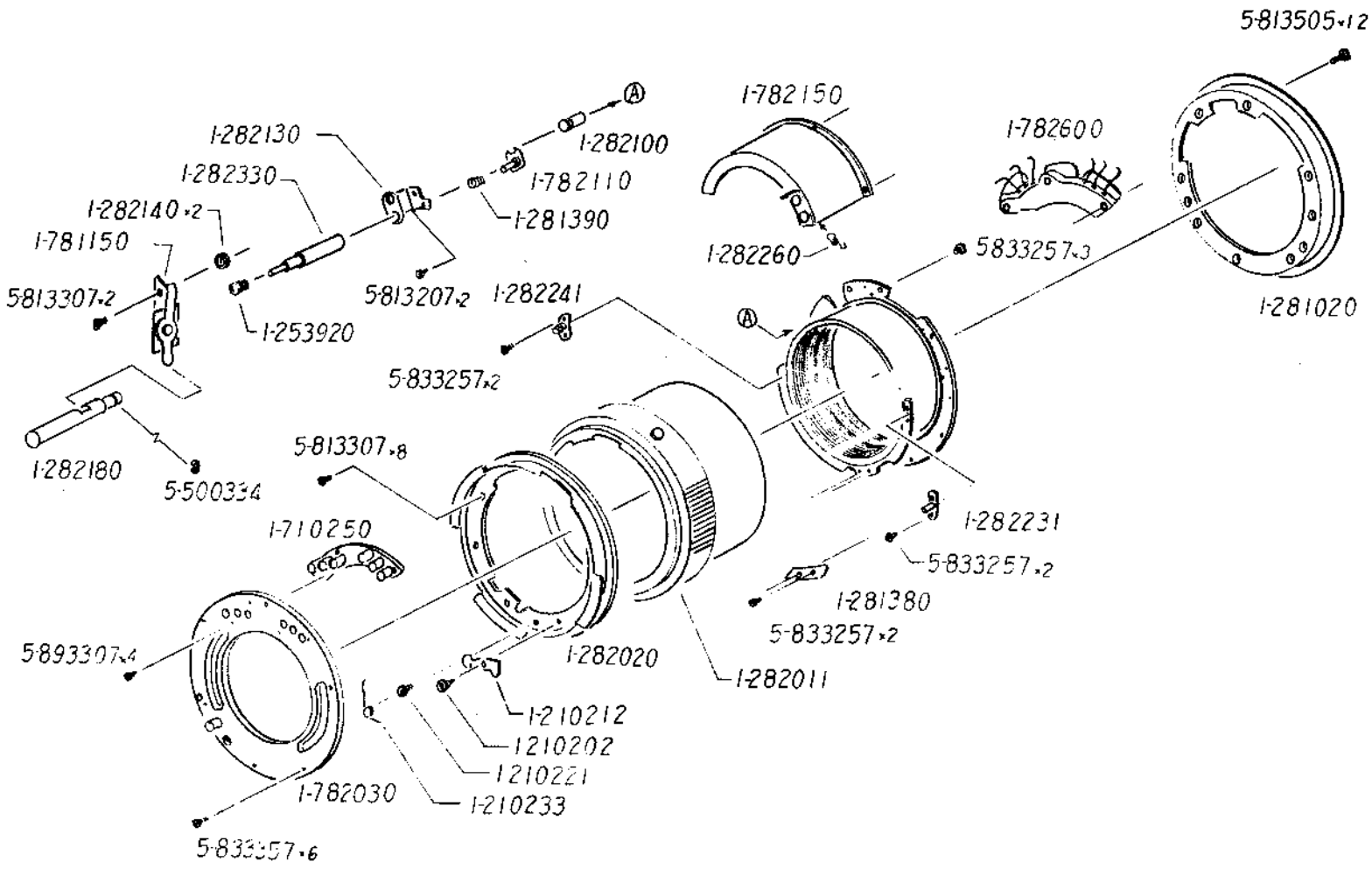
E-14


5-833357
5-813307-5
1-781050
5-770030
1-210101
1-781240
1-781330
(W/1-281351)
1-781260
1-281390
1-281351
5-813207
×2
1-281060
1-281070
1-210101
5-770030

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-281010	Tube E-14 barrel 外筒 E-14						
1020	Lens mount レンズマウント						E-28 E-42
1030	Bayonet ring A バヨネット A						
1060	Operating barrel A 作動リング筒A						
1070	Steel ball retainer A ボール押え A						
1110	Lens lock pin A レンズロックピン A						
1230	Lens release button A レンズ着脱ボタンA						
1351	Drive beareing metal A 駆動軸金具 A						
1360	Restrict metal 着脱規正板						E-28 E-42
1370	Lock pawl ロック爪柱		2				
1380	Lock metal ロック板						E-28 E-42

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-281390	S. driving metal spring S駆動金具バネ		2				E-28 E-42
1400	Safety link spring A 安全リンクバネA						
1-210101	Steel ball spacer ボール支持環		11				E-28 E-42
0202	Lock plate screw ロック板軸						"
0212	Lock plate ロック板						"
0221	Spring pawl ロック板SP掛						"
0233	Lock plate spring ロック板スプリング						"
0240	Bayonet index バヨネット接点標						"
1-710250	Contacts insulating plate 接片絶縁板						"

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-781040	Rear cover A 後板 A						
1050	Front cover A 前板 A						
1130	Lock release plate A ロック解除板 A						
1150	Release lever 着脱レバー						E-28 E-42
1180	Operating ring cover A 作動リングカバー A						
1240	Operating ring A (front) 作動リング A (前)						
1260	S. driving metal A S 駆動金具 A						
1330	Operating ring A (rear) 作動リング A (後)						
1601	Lens connector set A レンズコネクター A						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1-282260
5833257-3
5-813307-2
5-813207-2
1-282241
1-281020
1-253920
5-833257-2
1-282180
5-813307-8
5-500334
1-710250
1-282231
5-833257-2
1-281380
5-833257-2
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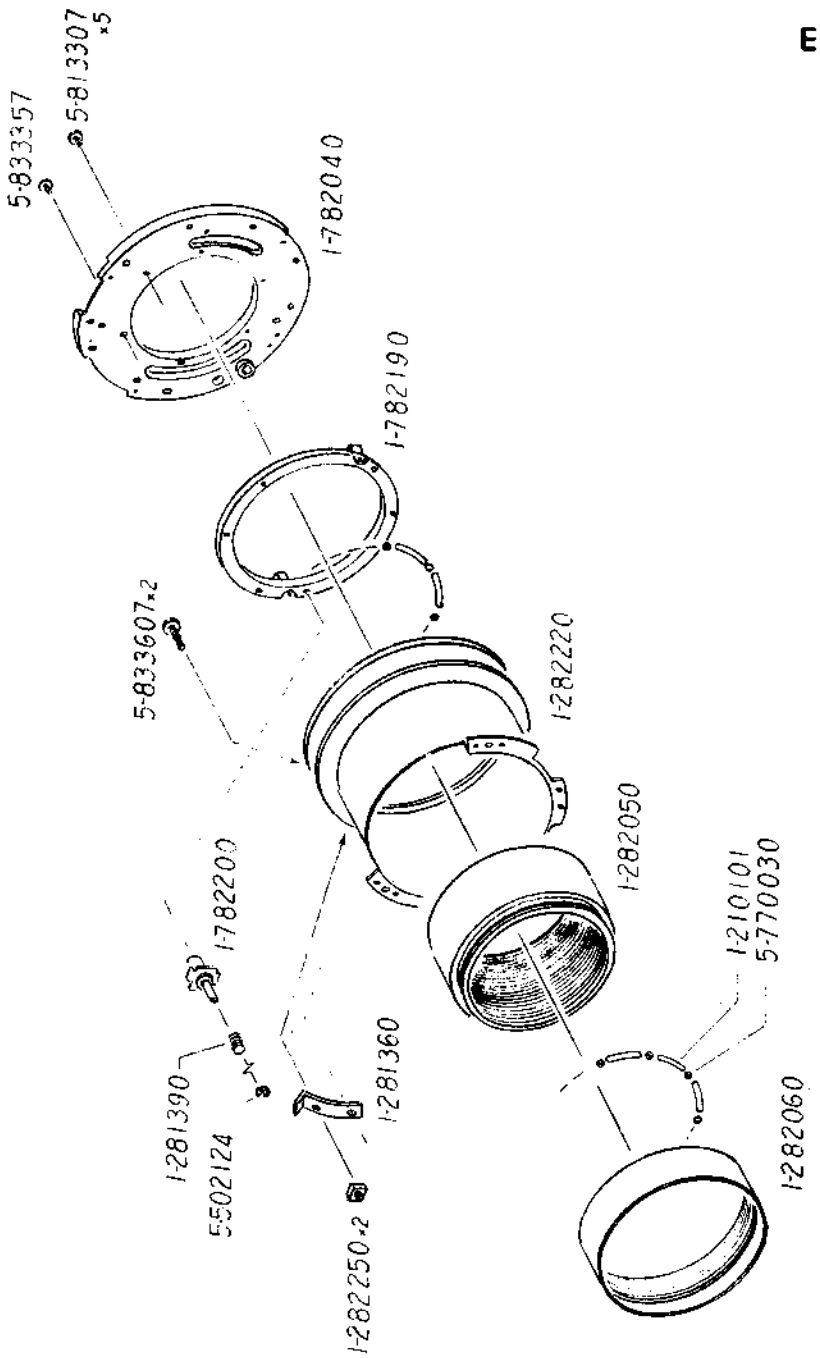
1-210233
1-782030
5-833357-6

E-28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1-782040
1-782190
5-833607 x2
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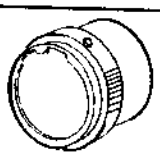
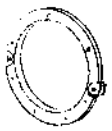
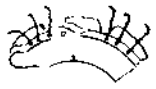
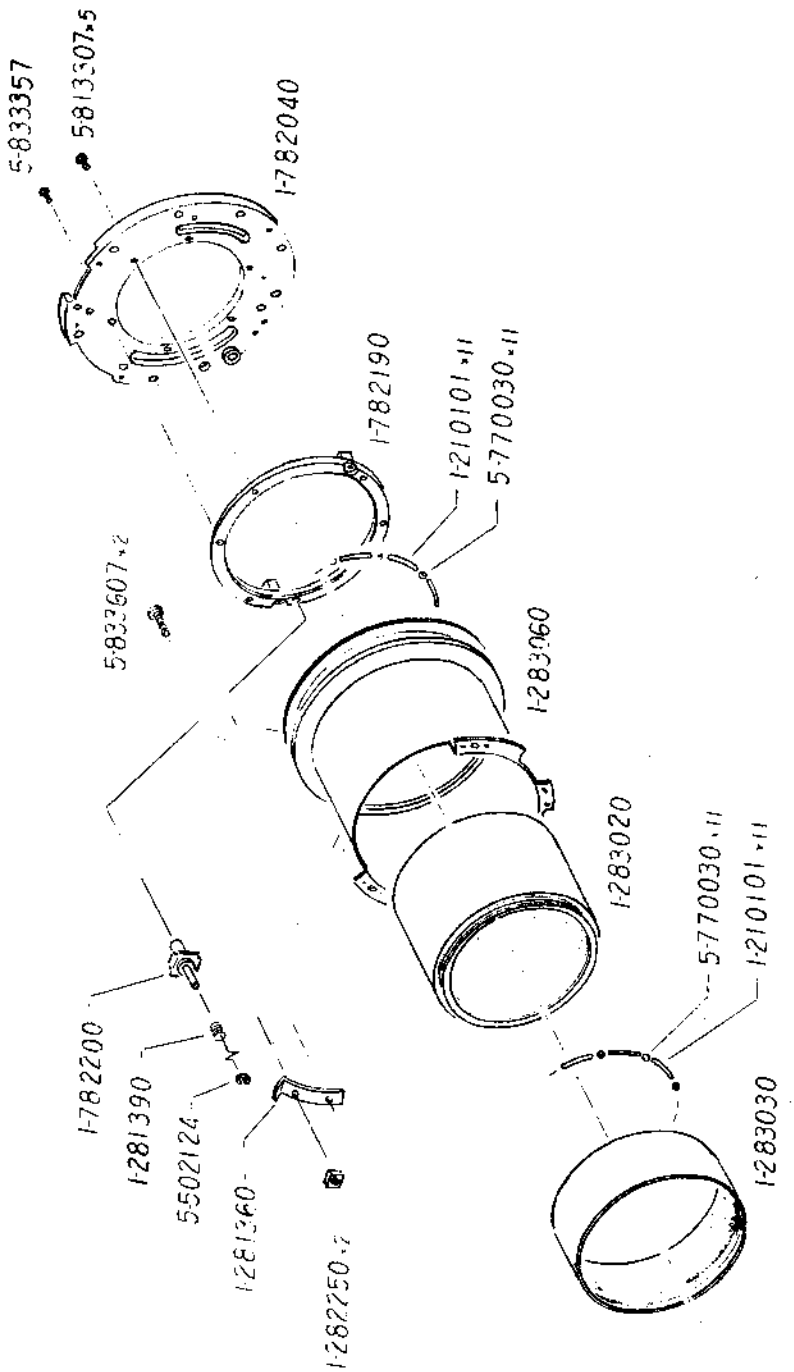
1-282050
1-782200
1-281390
5-502124
1-281360
1-282250 x2
1-210101
5-770030
1-282060

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-282011	Tube E-28 barrel 外筒 E-28						
2020	Bayonet ring B-C バヨネット B.C						E-42
2050	Operating barrel B 作動リング軸 B						
2060	Steel ball retainer B ボール押え B						
2100	Lens lock pin B-C レンズロックピン B.C						E-42
2130	Relaese plate bearing 絞り板軸受						E-42
2140	Collor B-C レバーアンビルカラー B.C		2				E-42
2180	Lens release pin B レンズ着脱ピン B						
2220	Operating ring B (rear) 作動リング B(後)						
2231	Set bearing metal B-C セット台金受 B.C						E-42
2241	Drive bearing metal B-C 駆動台金受 B.C						E-42

Parts No. 部品番号	Name 名称	Shape 形状	Pcsper Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-782030	Rear cover B-C 後板 B·C						E-42
2040	Front cover B-C 前板 B·C						E-42
2110	Lock release plate B-C ロック解除板 B·C						E-42
2150	Operating ring cover set B 作動リングカバーセット B						
2190	Operating ring set B-C 作動リングセット B·C						E-42
2200	S. driving metal B-C S駆動金具 B·C						E-42
2600	Lens connector set B レンズコネクターセット B						

Parts No. 部品番号	Name 名称	Shape 形状	Pcs.per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-282250	Restrict metal nut 規正板ネト		2				E-42
2260	Safety link spring B-C 安全リンクバネ B C						E-42
2330	Release restriction pin B 着脱制限ピン B						
1-253920	Spring スプリング						E-42

E-42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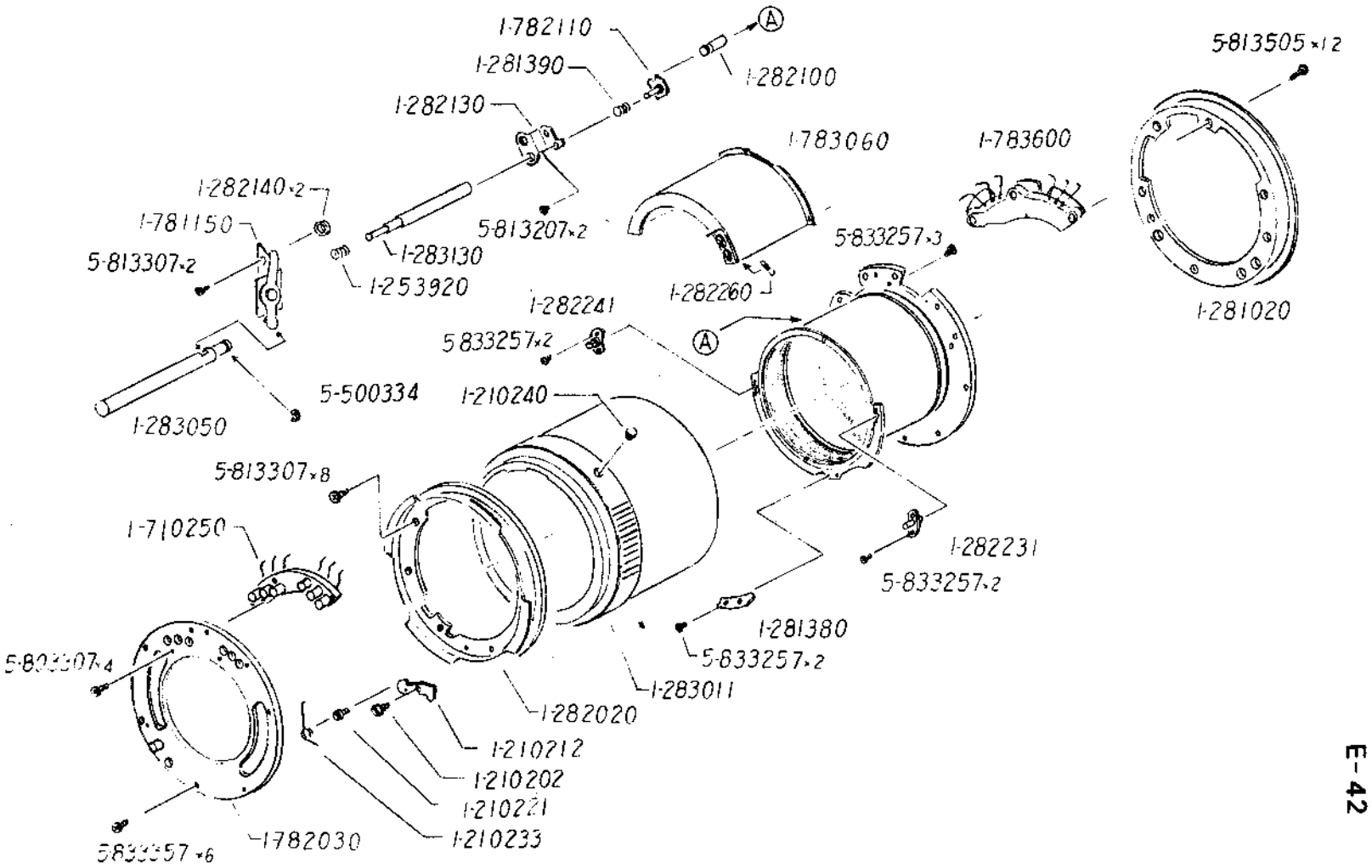
1-282750.2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1-282260
1-282241
1-281020
5-833257×2
Ⓐ
5-500334
1-210240
1-283050
5-813307×8
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1-282231
5-833257×2
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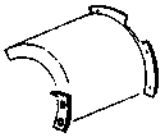
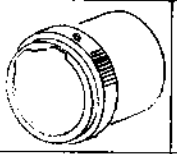
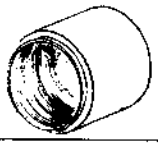
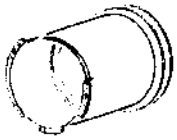
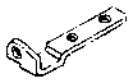
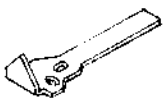
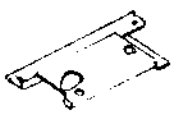
5-833257×2
5-813307×4
1-283011
1-282020
1-210212
1-210202
1-210221
1-210233
1-782030
5-833257×6

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-783060	Operating ring cover B-C 作動リングカバーセットC						
3600	Lens connector set C レンズコネクターセットC						
1-283011	Tube E-42 barrel 外筒 E-42						
3020	Operating barrel C 作動リング軸C						
3030	Steel ball retainer C ボール押え C						
3050	Lens release pin C レンズ着脱ボタンC						
3060	Operating ring C (rear) 作動リングC(後)						
3130	Release restriction pin C 着脱制限ピンC						

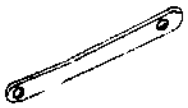
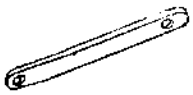
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-050032	Set lever shaft セットレバー軸					80	
0053	F-release pin sleeve F解除ピンスリーブ					25	
0063	Finder lock bearing ファインダーロック軸受					50	
0091	Finder lock stud ファインダーロック軸台柱					10	
0102	Release lever axle レリーズレバー軸					20	
0112	Bottom cover stud 底蓋取付ネジ		3			15	
0132	Release relay lever axle レリーズ中継レバー軸					20	

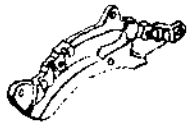
Parts No. 部品番号	Name 名称	Shape 形状	Posper Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-250161	Dark slide relay lever axle ダイ遮光継レバー軸					15	
0182	Release link spring holder 着脱リンクバネ掛					5	
0191	Connecting key spring holder バネ結合バネ掛		2			5	
0203	Dark slide pin sleeve ダイ遮光ピンスリーブ					15	
0212	M switch lever axle Mスイッチレバー軸					15	
0222	M switch lever spring holder Mスイッチレバーバネ掛					5	
0231	M switch link spring holder Mスイッチリンクバネ掛					5	
0251	Mirror arm axle (left) ミラーアーム軸(左)					70	
0271	Finder lock spring ファインダーロックバネ					20	
0280	Sleeve set screw スリーブ止ビス		2			7	

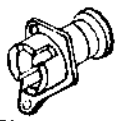
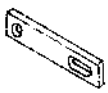
Parts No. 部品番号	Name 名称	Shape 形状	Pcsper Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-251152	Mirror 反射ミラー					450	
1164	Rear light-tight frame 後面遮光壁					250	
1210	Light-tight plate axle 遮光板軸		2		1-751100		
1221	Light-tight plate arm 遮光板アーム					35	
1243	Roller axle 遮光板アームコロ軸					10	
1270	M guide roller ミラーガイドコロ		2			10	
1280	M arm screw (left) ミラーアームセラン(左)					10	
1290	M stopper ミラーストッパー					50	
1311	M adjusting collar ミラー調整カラー					25	
1321	M adjusting axle ミラー調整軸					7	

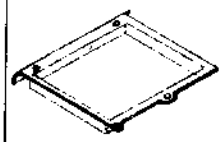
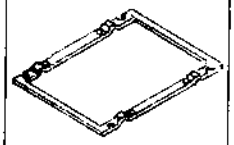
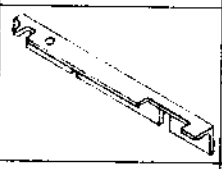
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-751460	M arm screw (right) ミラーアーム止ネジ(右)		2				
1471	M arm adjusting cam ミラーアーム調整カム						
1501	Operating plate set roller 作動板セットコロ					10	
1511	Operating plate roller 作動板コロ		2		1-751200	8	
1561	Set lever screw セットレバー止ネジ					6	
1571	Operating plate stud 作動板受ピン					6	
1581	Bottom light-tight plate 底面遮光板					90	
1601	Operating ring spring (right) 作動リングバネ(右)					35	
1613	M driving lever spring ミラー駆動レバーバネ					20	
1622	Release return spring レリーズ戻しバネ					20	

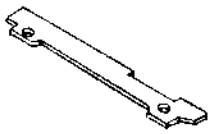
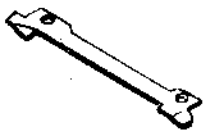
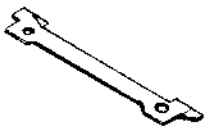
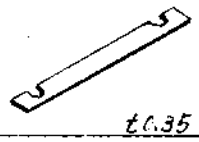
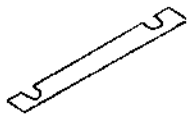
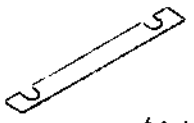
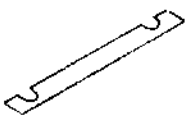
Parts No. 部品番号	Name 名称	Shape 形状	Posper Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-251631	Release relay spring レリーズ中継バネ					15	
1641	Set screw 作動板取付ネジ				1-751200	15	
1682	Light baffle cover 遮光カバー					40	
1693	Light baffle cover screw 遮光カバー取付ネジ					20	
1700	M adjust O-ring ミラー調節Oリング					20	
1710	M stopper screw ミラーストッパー止ネジ		2			5	
1740	Adjust cam set screw 調整カム止ネジ					10	
1751	Mirror holder (right) ミラー押え板(右)					15	
1761	Mirror holder (left) ミラー押え板(左)					15	

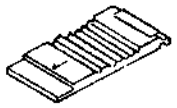
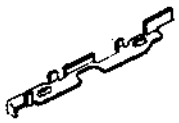
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-251800	Frame metal (left) 後面遮光壁座(左)					55	
1810	Frame metal (right) 後面遮光壁座(右)					55	
1822	Spring 遮光板用バネ					10	
1840	Light baffle arm roller D 遮光板アームコロD	ø3.5				10	adj. 1-251231
1860	Light baffle arm roller E 遮光板アームコロE	ø3.3				10	adj. 1-251231

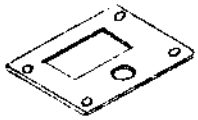
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-252132	Pin set screw S作動ピン止ネジ				1-752010		
2141	Spring collar 作動バネカラー				"		
2161	Lens connector レンズコネクター				1-754200		
2181	Connector cover コネクターカバー				1-754200		
2228	Lens mount レンズマウント					3,500	
2232	Bayonet stopper pin バヨネットストッパピン					10	
2241	Operating spring holder (right) 作動バネ掛(右)					6	
2251	Operating spring holder (left) 作動バネ掛(左)					6	
2270	S button stopper ring Sボタン止リング					5	
2281	S button ring B シャッターボタンリングB					140	

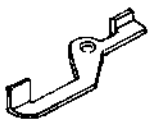
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-252294	Lens release button レンズ着脱ボタン					20	
2309	Lens button ring レンズボタンリング					180	
2312	S latch spring S掛金バネ				1-752090	20	
2343	S button lock click ボタンロッククリック					15	
2370	S release link S レリーズリンク				1-752090	10	
2380	Release link set screw レリーズリンク止ネジ				1-752090	10	
2451	Operating ring stopper 作動カリングストッパー					20	

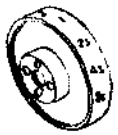
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-252515	Light-baffle frame 画面遮光板					110	
2522	Frame gate 画面枠					200	
2532	Focusing screen guide 焦点板ガイド					50	
2603	Top frame light baffle 上枠遮光板		2			60	
2612	Focusing screen guide stud 焦点板ガイド柱		2			15	
2641	Screen holder guide 焦点板押えガイド		2			15	
2651	Back coupling spring バック結合バネ					50	
2662	AE connector set screw AEコネクター止ネジ					10	
2671	Back coupling spring retainer バック結合バネ取付板					30	

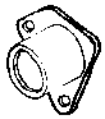
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-252711	Finder mounting claw ファインダー結合爪		2		1-755200	15	
2722	Finder mount spring (left) ファインダー結合バネ(左)				"	30	
2730	Finder mounting spring (right) ファインダー結合バネ(右)				"	30	
2790	Adjusting liner ピント調整ライナー	 t0.35	2			30	
2800	"	 t0.2					
2810	"	 t0.1					
2820	"	 t0.08					
2830	"	t0.05					

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-253061	Battery chamber button フリック板					20	
3074	Battery chamber cover 電池蓋					40	
3141	Back coupling claw バック結合爪		2			35	
3151	Coupling claw guide バック結合爪ガイド		4			15	
3161	Back coupling link バック着脱リンク					50	
3181	Dark slide connecting pin 引蓋連動ピン					20	
3210	Safety lever holder 引蓋中継レバー持え					45	
3221	Dark slide safety latch 引蓋安全掛金					30	
3231	Safety latch axle 引蓋安全掛金軸					10	

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
[illegible]3240	Speed-grip shutter release rod グリップレリーズ棒					60	
3252	MD connector cover MDコネクター蓋					15	
3270	Tripod socket ($\frac{1}{4}$" screw) 三脚ネジ				1-755330	120	
3281	Tripod mounting shoe 三脚シュー					150	
3293	Battery chamber bottom plate 電池ボックス底板					20	
3332	Back coupling link guide バック着脱リンクガイド					10	
3340	Link collar バック着脱リンクカラー					10	
3350	Battery chamber button spring 電池蓋バネ					10	
3362	Dark slide safety lever spring 引蓋安全レバーバネ					10	
3371	Release relay lever spring レリーズ中継レバーバネ					10	

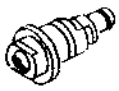
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-253380	M. switch lever spring Mスイッチレバーバネ					15	
3390	Back coupling claw spring バック結合爪バネ		2			20	
3401	Back coupling link spring バック着脱リンクバネ					10	
3411	Operating ring spring 作動リングバネ				1-752010	30	
3421	Lens button safety lever レンズ鈕安全レバー					15	
3431	Safety lever axle レンズ鈕安全レバー軸					10	
3440	M. switch link spring Mスイッチリンクバネ					15	

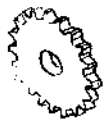
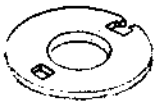
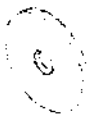
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-23562?	Safety lock plate 安全ロック受板					20	
3632	Safety lock spring レンズ安全ロックバネ					10	
3704	Shutter speed dial シャッター目盛環					250	
3713	S. dial lens S ダイヤル窓					30	
3725	AE switch cover AE スイッチカバー					20	
3751	M. switch link guide M スイッチリンクガイド		2			8	
3772	AE changeover rod guide AE 切換棒ガイド					20	
3782	Switch cover stud A スイッチカバー柱 A		2			15	
3791	Switch cover stud B スイッチカバー柱 B					15	
3810	Switch lever axle AE スイッチレバー軸					10	

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-253900	Wire holder 配線押え		2			10	
3920	AE changeover rod spring AE切換棒バネ					6	
3951	Lens safety link guide レンズ安全リンクガイド					15	
3960	L. button safety link レンズボタン安全リンク					40	
4012	Lens button ring レンズボタンリング						
4049	Lens button sleeve レンズボタンスリーブ						
4069	Button lock spring レンズボタンロックバネ					10	
4080	Lens release button レンズ解除ボタン						

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-754471	F. release plate collar (upper) F解除板(上)カラー		2		1-753500	10	
4500	F. lever upper spring F解除レバー上バネ				"	20	
4541	F. lever lower spring F解除レバー下バネ				"	5	
4710	Stopper screw ストッパーネジ				"	5	
4751	Holding claw spring F解除保持爪バネ				"	20	
4790	Upper plate spring F解除板上バネ				"	15	
4830	Release plate roller 解除板コロ		4		"	8	
4841	F. release plate collar (lower) 解除板カラー(下)		2		"	10	
4852	F. release plate collar (upper) 解除板カラー(上)		2		"	10	
4871	F. release lever axle (upper) F解除レバー軸(上)				"	10	
4881	F. release lever axle (lower) F解除レバー軸(下)				"	10	

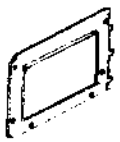
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-254892	Winding safety lever spring F巻上安全レバーバネ				1-753500	20	
4911	F. release pin F解除ピン					15	
4930	Winding safety lever (upper) F巻上安全レバー(上)				1-753500	25	
4941	Safety lever collar F巻上安全レバーカラー				"	10	
4953	Safety lever upper spring F巻上安全レバー上バネ				"	15	

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価(¥)	Remarks 備考
1-255051	Right cover setting stud 右カバー取付植ネジ						
5161	Winding main shaft 巻上主軸				1-753100	80	
5170	Winding cam washer 巻上カム座金				"	5	
5221	Cam spring holder カムバネ押				1-753190 1-753100	5	
5230	Cam holding nut カム押えナット				1-753100	15	
5292	Multi-relay lever screw マルチ中継レバー止ネジ				"	15	
5350	Release safety lever (upper) レリーズ安全レバー(上)				1-753100	20	
5362	Upper safety lever axle 安全レバー(上)軸				"	10	
5371	Multi lever axle マルチレバー軸				"		
5402	Setting screw マルチセットレバー止ネジ				"	8	

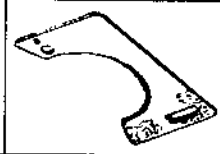
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-255432	Transmission gear 中間歯車				1-753100	300	
5440	Connecting gear 連結歯車				"	210	
5451	Gear arm collar ギヤーアームカラー				"	10	
5462	Connecting gear arm (upper) 連結ギアーアーム(上)				"	20	
5471	Gear arm screw ギヤーアーム止ネジ				"	10	
5482	Release safety cam レリーズ安全カム				"	80	
5490	Winding main gear 巻上主歯車				"	380	
5500	Winding ratchet 巻上ゝ車				"	120	
5510	Reverse stopping claw 逆転止ゝ				"	8	
5562	Main shaft cap 主軸押えリング				"	50	
5572	Main shaft set screw 主軸止ネジ				"	25	

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-25571[illegible]	Set cam liner セットカムライナー				1-753100		
5760	Connecting gear screw 連結ギヤー止ネジ				"	6	
5790	Winding stopper claw spring holder 巻止爪バネ押え				1-753100		
5822	Reverse stop claw screw 逆転止爪ネジ		2		"	6	
5830	Gear friction spring ギヤーフリクションバネ				"	15	
5842	Winding stopper lever spring 巻止レバーバネ				"	15	
5852	Gear arm spring 連結ギヤーアームバネ				"	15	
[illegible]861	Winding stopper claw spring 巻止爪バネ				"	15	
5871	Auxiliary plate spring 巻止補助板バネ				1-753190 1-753100	30	
[illegible]881			2				

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-255890	Reverse stop claw spring 逆転止爪バネ				1-753100	20	
5903	Multi link spring マルチリンクバネ				"	15	
5912	Safety lever (upper) spring 安全レバー(上)バネ				"	10	
5922	Multi-operating lever spring マルチ作動レバーバネ				"	10	
5930	Main shaft thrust washer A 主軸スラストワッシャー A				"	5	
5940	Main shaft thrust washer B 主軸スラストワッシャー B				"	5	
5950	Spring washer 主軸止バネ座金				"	5	
5960 5970	Main shaft washer A Main shaft washer B 主軸押え座金 A B				"	5	
5990	Connecting gear stopper 連結ギヤーストッパー				"		

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-25-6091	Multi exposure lever マルチレバー					60	
6111	Multi lever ring マルチレバーリング					15	
6150	Name plate カメラ銘板					40	
6202	Rear light tight plate 背面遮光板					120	

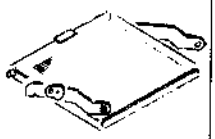
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-256610	Cable release pin ケーブルレリーズピン					10	
6661 9031	S. dial cover (W) " (B) S.ダイヤルカバー(白)(黒)				1-755500 1-755550	150 200	
6800	S. dial stopper S ダイヤルストッパー				1-755500	8	

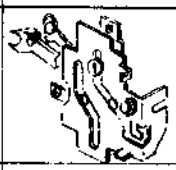
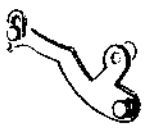
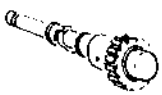
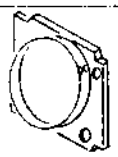
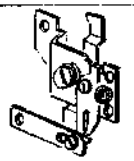
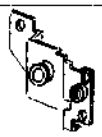
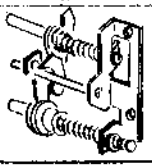
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-257002	Leatherette (right-front) 右カバー革(前)					30	
7010	Leatherette (right-rear) 右カバー革(後・上)					10	
7020	Leatherette (rear-lower) 右カバー革(後・前)					10	
7052	Leatherette (multi-lever link) マルチレバーリンク革					10	
7040	Crank base cover クランク座化粧板		2			60	
7050	Leatherette (left cover) 左カバー革				1-755500	40	
7060	Leatherette (S. dial cap) Sダイヤル蓋革		2			10	

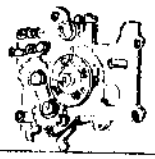
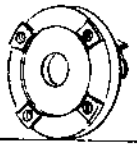
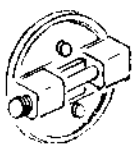
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-257101	Light baffle paper (right-front) 遮光紙(右前)					50	
7112	Light baffle paper (right-rear) 遮光紙(右後)					30	
7121	Light baffle paper (right-center) 遮光紙(右中)				1-751200	15	
7141	Light baffle paper (left-front) 遮光紙(左前)					40	
7152	Light baffle paper (left-rear) 遮光紙(左後)					20	
7161	Bottom light baffle (front) 底面遮光紙(前)					20	
7171	Bottom light baffle (rear) 底面遮光紙(後)					25	
7230	Rear light baffle 後面遮光幕					30	

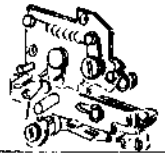
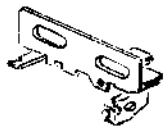
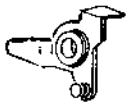
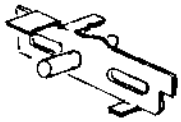
ZENZA BRONICA

Parts No. 部品番号	Name 名　　称	Shape 形　　状	Pcsper Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単　価	Remarks 備　　考

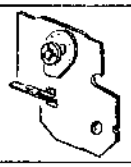
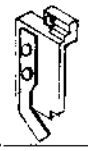
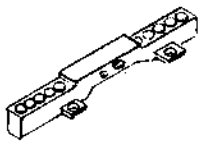
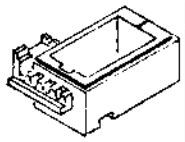
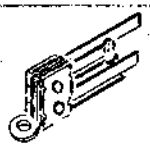
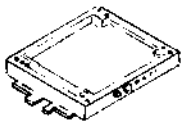
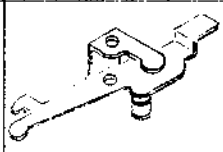
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-0030	Finder lock pin ファインダー解除ピン					25	
0040	Dark slide safety lever 引蓋安全中継レバー					50	
0050	Flash synch socket シンクロソケット					210	
0060	M switch lever M スイッチレバー					80	
0070	M switch link M スイッチリンク					40	
0080	AE switch lever AE スイッチレバー					50	
0090	Release relay lever レリーズ中継レバー					85	
1010	Mirror frame set ミラー枠					950	
1100	Light-tight frame set 遮光板セット					580	
1170	M guide plate (right) M作動溝板(右)					45	
1180	M guide plate (left) M作動溝板(左)					45	

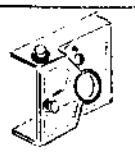
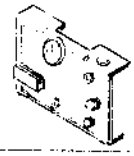
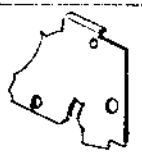
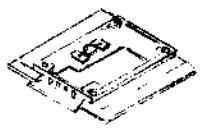
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-751200	M driving unit ミラー駆動ユニット					520	
1230	M driving lever ミラー駆動レバー				1-751200	80	
1250	M operating plate set ミラー作動板				"	80	
1260	Set lever セットレバー					150	
1290	Release button set S ボタンセット					460	
2010	Shutter operating ring unit S 作動リングユニット					1,350	
2060 2510	Front cover (W) " (B) 前カバー (白) (黒)					650	
2090	S latch set S 掛金受板セット					180	
2100	S latch base S 掛金受板				1-752090	50	
2110	S latch S 掛金				"	80	
2120	Lens release unit レンズ着脱ユニット						

Parts No. 部品番号	Name 名称	Shape 形状	Pcsper Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-752130	Lens safety lock レンズ安全ロック					45	
3100	Winding unit 巻上地板ユニット					2,600	
3130	Reverse stop claw mount set 逆転止爪軸板				1-753100	30	
3170	Winding wheel set 巻上輪				"	300	
3190	Setting cam unit セットカムユニット				"	260	
3220	Winding stopper lever 巻止レバー				"	60	
3230	Multi-relay lever マルチ中継レバー				"	40	
3240	Multi operating lever マルチ作動レバー				"	30	
3250	Multi-set lever マルチセットレバー				"	25	
3310	Crank base casting set クランク座セット					480	
3320 3350	Film winding crank " (black) 巻上クランク(黒)					650	

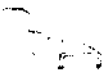
Parts No. 部品番号	Name 名称	Shape 形状	Posper Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-753340	Crank ring set クランクリング set					250	
3500	F release unit F解除ユニット					1,000	
3520	F release lever (upper) F解除レバー(上)				1-753500	30	
3530	F release lever (lower) F解除レバー(下)				"	40	
3550	F release plate (lower) F解除板(下)				"	60	
3570	F release holding claw F解除保持爪				"	50	
3590	F release plate (upper) F解除板(上)				"	60	
4600	Winding safety lever F巻上安全レバー(下)				"	50	

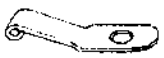
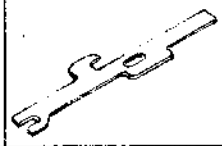
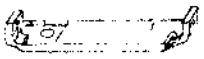
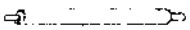
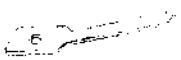
ZENZA BRONICA ETR | Camera body (Ass'v)

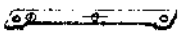
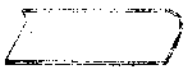
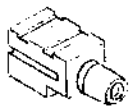
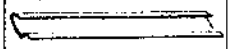
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-754[illegible]	Shutter circuit シャッター回路ユニット					3,000	
4120	AE changeover rod AE切換桿					40	
4130	Checker contact case チェッカー接点台					45	
4200	Lens connector set レンズコネクターセット					770	
4300	AE connector set AEコネクターセット					400	
4400	Battery chamber 電池ボックスセット					350	
4500	M switch set Mスイッチセット					800	
5200	Top frame 上枠セット					950	
5280	Focusing screen holder 焦点板押え					35	
5310	Release lever レリーズレバー					70	

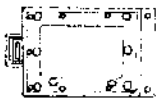
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-755400 5450	Right side cover set " (black) 右カバーセット(黒)					850	
5500 5550	Left side cover set " (black) 左カバーセット(黒)					1,700	
5530	S dial cap Sダイヤル蓋					400	
5570	S dial knob Sダイアルノブ					210	
1-751280	R. light-tight plate 右遮光板					65	
2070	Front cover connecting plate (right) 前カバー取付板(右)						
2080	Front cover connecting plate (left) 前カバー取付板(左)						
2169	Lens button lock レンズボタンロック						
5530	Bottom cover set 底蓋セット					1,200	

Parts No. 部品番号	Name 名　　称	Shape 形　　状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単　価	Remarks 備　考
[illegible]	Film type indicator frame インデックス入れ				1-761210	25	
0031	Indicator frame base インデックス入れ台				1-761210	45	
0123	Light baffle バックモルトプレン A	28	2				
0171	Rear cover leatherette 後蓋革					90	
0182	Light baffle 後蓋モルトプレン	73	2				
0200	Light baffle	100	2				
0312	Spool holder lock スプールホルダロック					15	
0432	Spool holder base スプール受座					90	
0541	Base fixing plate スプール受押え					50	
0352	Spool holder spring スプール受バネ					10	

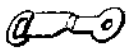
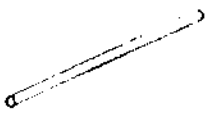
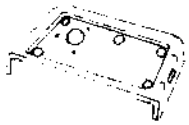
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-260362	Spool holder auxiliary plate スプール受補助板		2		1-763400	20	
0372	120 film indicator plate 赤窓板 (120)					40	
0382	Spool holder base pin スプール受座軸		2			10	
0411	Spool holder collar スプール受カラー		2		1-763400		
0452	Pressure plate (120) 圧板 (120)					510	
0463	Pressure plate pin 圧板軸		2			40	
0471	Pressure plate spring 圧板バネ					20	
0591	Latch guide 裏蓋ガイド					10	
0600	Spool holder leatherette スプール受皮		2			10	
0610	Left side cover leatherette 左外装革					20	

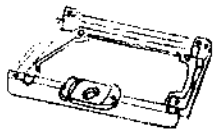
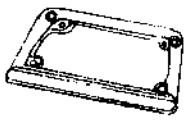
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-260690	Gate roller plate lower ゲートローラー押え下		2			20	
0700	Spool lock spring スプールロックバネ					20	
0790	Gate roller cover ゲートローラカバー		4			10	
0813	Connecting metal (upper) バック掛金(上)					60	
0822	Connecting metal (lower) バック掛金(下)					60	
0832	Camera opener plate 後蓋用開板下					55	
0855 9010	Bottom plate (W) " (B) バックボトムカバー					750	
0861	Gate roller ゲートローラー		2			40	
0874	Gate roller plate upper ゲートローラー押え		2			20	
0882	Back slide click spring 引蓋クリック板					10	

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-260892	Dark slide guide 引蓋Uカバー					50	
0902	Light-tight plate 引蓋U遮光板					20	
0912	Dark slide signal plate A 引蓋シグナル板A					10	
0921	Dark slide signal plate B 引蓋シグナル板B					10	
0930	Dark slide signal pin 引蓋シグナル筒					25	
0942	Lighr-toght plate C 引蓋遮光板C						
0952	F release cylinder A F解除筒A					20	
0961	F release cylinder B F解除筒B					35	
0974	Back cover release button 開閉ボタン					20	
0981	F release pin F解除ピン		2			20	
1001	Steel ball 3/32" 3/32鋼球					10	

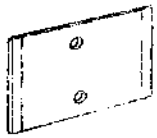
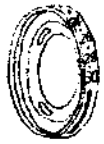
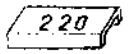
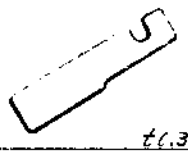
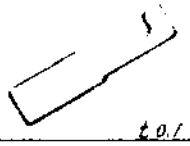
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
[illegible]61014	Front-side back plate バック前板					300	
1021	Cover release plate collar 後蓋開閉板カラー		2			10	
1030	Latch plate spring 開閉板バネ					10	
1042	Light-tight plate B 引蓋日遮光板B					20	
1051	Signal plate guide 引蓋シグナル板ガイド					25	
1062	Release button leatherette 開閉つまみ革					5	

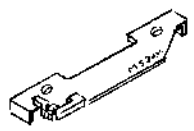
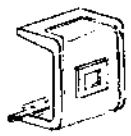
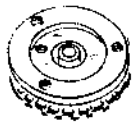
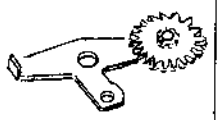
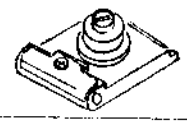
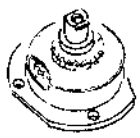
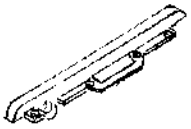
Parts No. 部品番号	Name 名称	Shape 形状	Pcsper Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-261240	Wind up gear A ワインド機上歯車A					160	
1252	Wind up gear B ワインド機上歯車B					240	
1261	Wind up gear C ワインド機上歯車C					200	
1273	Wind up gear D ワインド機上歯車D					200	
1282	Spool metal bearing スプール軸受					220	
1293	Spool clutch axle スプールクラッチ軸					40	
1302	Wind stopper ratchet 巻止爪車					140	
1313	Spool metal スプール軸					90	
1320	Spool shaft (upper) スプール軸上					20	
1491	Wind stopper pawl 巻止爪					10	
1443	Dividing plate base 割出板受				1-763100	160	

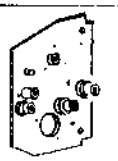
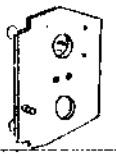
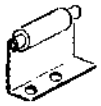
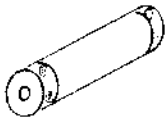
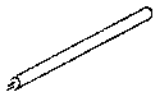
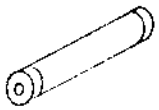
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-261453	Dividing plate collar 割出板受カラー				1-763100	15	
1463	Counter dial (120) 指数板 (120)					260	
1470	Counter dial stopper 指数板ストッパー					10	
1552	Dividing plate axle 割出板軸					25	
1663	Guide screw B ガイドビス B		4			8	
1681	Right side cover pillar B 右カバー柱 B					15	
1702	Spool shaft (right) スプール受右					70	
1721	Counter roller shaft B 指長ローラー軸 B					30	
1733 9040	Manual film winder cover (W) " (B) 巻手つまみカバー					120	
1763 9020	M. right side cover (W) " (B) M右外蓋					580	

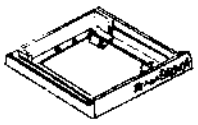
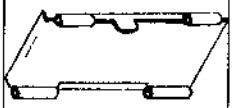
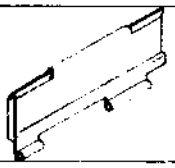
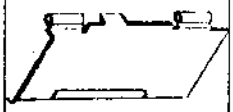
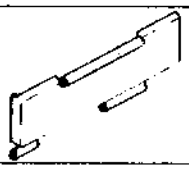
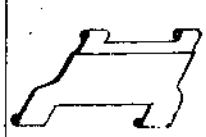
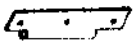
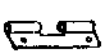
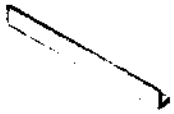
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-261775 9030	M. left side cover(W) " (B) M左外蓋					520	
1782	Light-tight frame (right) 右遮光枠					120	
1792	Light-tight frame (left) 左遮光枠					110	
1801	Guide collar B ガイドカラーB		5			10	
1812	Frame index mark 指標					8	
1841	Counter dial stopper pin (120) 背蓋板ストッパーピン					5	
1861	F. release spring フ解除バネ					15	
1870	Starting lever spring 起動レバーバネ					15	
1882	Spool clutch spring スプールクラッチバネ					70	
1891	Counter dial spring				1-763100	10	
1900	F. release lever pin spring フ解除レバーピンバネ					10	

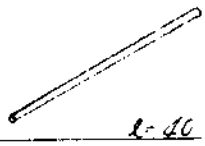
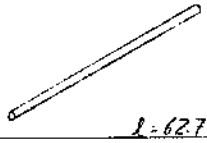
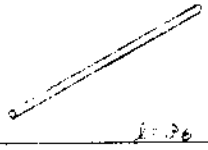
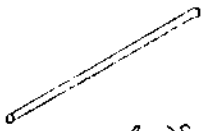
Parts No. 部品番号	Name 名称	Shape 形状	Pcs.per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-261921	Counter lever spring 指数板送爪バネ					10	
1941	Reverse stopper spring 逆転止バネ					10	
1951	Auxiliary plate spring 割出補助板バネ				1-763100	25	
1961	Right cover leatherette 右外装革					25	
1970	Film winder leatherette 巻上げつまみ革					5	
1990	Cover pillar B spring 右カバー柱Bバネ						
1-160481	Exposure counter lens 露出用レンズ					40	

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-262023	Pressure plate (220) 圧板 (220)					550	
2032	Counter dial (220) 指数板 (220)					260	
2041	220 film indicator plate 銘板 (220)					40	
2060	Counter dial stopper pin (220) 指数板ストッパーピン(220)						
2560	Rear cover lock spring 後蓋ロックバネ						
2570	Adjusting liner 後蓋開閉板座金						
2580	Adjusting liner						
2590	Adjusting liner						

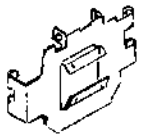
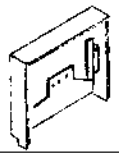
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1[illegible]	Camera opener plate ass'y (upper) 後蓋開閉板(上)					60	
1140 1170 3050 4150	Top cover (120,) " (220,) " (120,) " (220,) 上カバー					400	
1210	Rear cover set 後蓋セット					2,100	
2200	Manual film winder set 巻きツマミセット					410	
3100 3140	Dividing plate set (120) " (220) 突出板セット(120)(220)					400	
3210	Counter driving gear set 指数板歯車台セット					400	
3310	Wind stopper lever 巻止レバー					250	
3400	Spool holder set スプール受		2			300	
[illegible]	Spool [illegible] set スプール[illegible]受セット					730	
4810	Winding gear bearing set 巻上歯車受板					50	
[illegible]	[illegible] tilt cover 右巻戻板上セット					35	

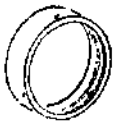
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-763840	F.release shaft set F解除シャフトセット					50	
4110	M right side plate M右板					200	
4120	Starting lever 起動レバー					50	
4210	M left side plate set M左板					150	
4310	Spool spring roller set スプールバネローラーセット		2			80	
4400	Frame counter roller A 測長ローラーA					250	
4410	Roller shaft A 測長ローラーA軸					150	
4500	Frame counter roller B 測長ローラーB					250	

Parts No. 部品番号	Name 名称	Shape 形状	Posper Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
?-258001	Hood frame フードフレーム					1,000	
8010	Top cover 上蓋					640	
8040	Right plate A 右板(A)					95	
8050	Right plate B 右板(B)					85	
8060	Left plate A 左板(A)					95	
8070	Left plate B 左板(B)					85	
8090	Rear plate operation plate 後板作動板					110	
8100	Rear plate connecting plate 後板結合板					160	
8110	Operation plate metal 後板作動板軸受					55	
8120	Light-tight plate (left) 遮光板(左)					40	
8130	Light-tight plate (right) 遮光板(右)					40	

Parts No. 部品番号	Name 名称	Shape 形状	Pcs.per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-258140	Top cover metal (left) 上蓋軸受(左)					50	
8150	Top cover metal (right) 上蓋軸受(右)					50	
8160	Magnifier O-C lever ルーペ開閉レバー					60	
8180	Connecting plate holder A 後板結合板押え(A)					25	
8250	O-C lever screw 開閉レバー取付ビス					35	
8320	Magnifier O-C axle ルーペ枠開閉軸		3			27	
8330	Operation plate axle 後板作動板軸					10	
8340	Top cover O-C axle 上蓋開閉軸					10	
8450	Plate axle 方名板軸		2			15	
8360	Rear plate O-C axle 後板開閉軸		3			25	

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
[illegible]8380	Top cover C-C spring (left) 上蓋用用バネ(左)					20	
8380	Top cover C-C spring (right) 上蓋用用バネ(右)					20	
8390	Frame C-C spring ルンペ枠用用バネ					15	
8400	Side plate C-C spring (left) 横板用用バネ(左)					10	
8410	Side plate C-C spring (right) 横板用用バネ(右)					10	
8420	Frame C-C spring ルンペ枠用用バネ					15	
[illegible]440	Top cover leatherette 上装革					40	

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-756080	O-ring lever relay lever ルーペ開閉中継レバー					30	
6090	Catch button set 開閉ボタンセット					120	
6110	Magnifier frame set ルーペ枠セット					320	
6160	Magnifier base set ルーペ台板セット					170	
6250	Rear plate set 後板セット					180	

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-210000	Shutter unit #773 シャッター #773					15,000	
0152	Fixing ring シャッター取付リング					150	
0162	A-T click plate A-T クリック板					25	
0202	Lock plate axle ロック板軸					15	
0213	Set ring locking plate セットリングロック板					25	
0221	Lock plate spring holder ロック板スプリング押					12	
0233	Lock plate spring ロック板スプリング					20	
0284	Distance scale ring ヘリコイドスケール					1,500	

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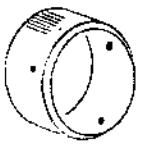
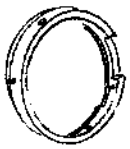
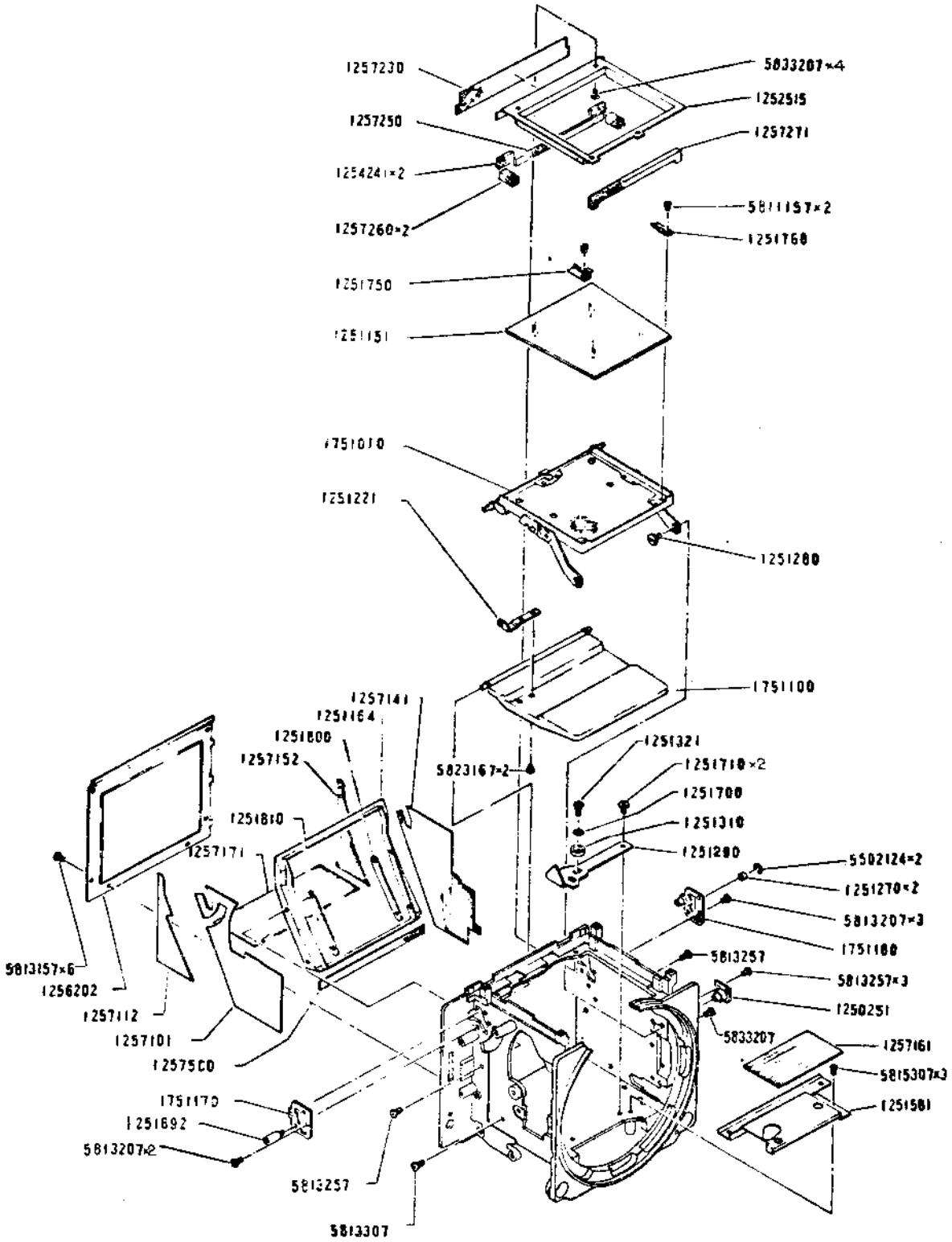
1-210475	Preview arm spring A 手動アームスプリングA					20	
0482	Name ring 化粧環					1,400	
0512	Leatherette スケール擬革					50	
0521	Fixing tape 固定テープ						
0531	Light-tight ring 遮光環					90	
0570	Spring guide スプリングガイド					10	
0621	A-T ring lock screw T.レバーロックネジ					30	

Parts No. 部品番号	Name 名称	Shape 形状	Posper Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-210294	Depth of field scale ring 深度リング					1,500	
0301	Preview lever 手動レバー					30	
0310	Preview lever axle 手動レバー軸					20	
0324	Front barrel 前枠					720	
0335	Aperture ring 絞りリング					900	
0342	Preview arm 絞りアーム		2			40	
0372	Front auxiliary barrel 前枠					900	
0412	Preview arm spring holder 手動アーム SP掛					15	
0423	Preview arm screw A 手動アーム取付A					15	
0433	" B 手動アーム取付B					15	
0464	Preview arm spring B 手動アームスプリングB					20	

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-710140	A-T ring T切換リング組					230	
0120	Preview arm set 手動アーム セット					120	
0220	Set ring unit セットリングユニット					2,200	
0260	Flexible print A-B フレキシブルプリントA-B					750	
0300	Helicoid unit ヘリコイドユニット					4,800	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1751010
1251221
1251280
1751100
1257141
1251164
1251800
1257152
5823167×2
1251321
1251710×2
1251700
1251810
1251310
1257171
1251290
5502124×2
1251270×2
5813207×3
1751180
5813257
5813257×3
1250251
5833207
1257161
5815307×3
1251581
5813257×6
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1257112
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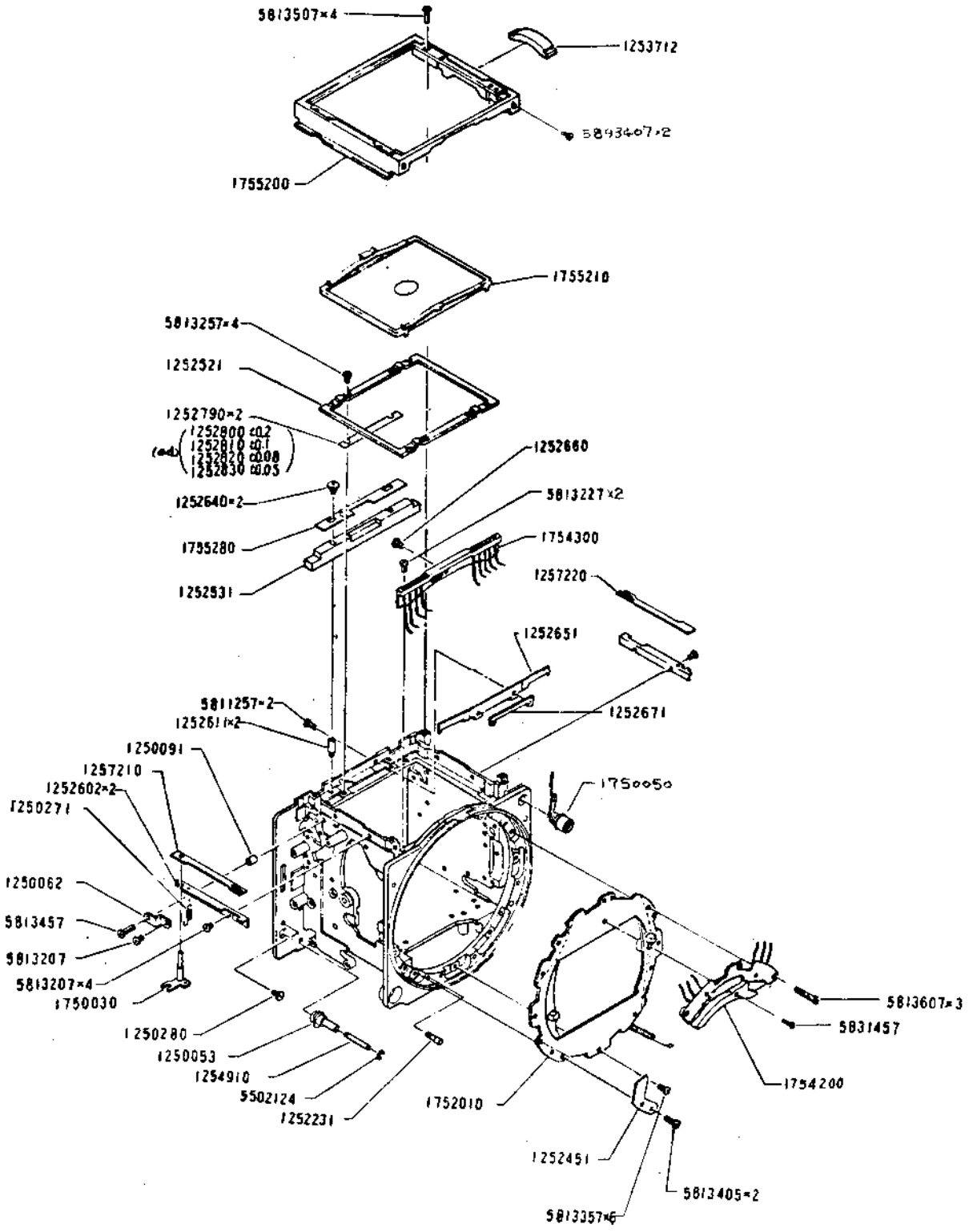
1751170
1251692
5813207×2
5813257
5813307

(1)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5893407×2
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1755210
5813257×4
1252521
1252790×2
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1252810 ±0.1
1252820 ±0.08
1252830 ±0.05
(adj)
1252660
1252640×2
5813227×2
1755280
1754300
1252531
1257220
1252651
5811257×2
1252671
1252611×2
1250091
1257210
1252602×2
1250271
1750050
1250062
5813457
5813207
5813207×4
1750030
1250280
1250053
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1252231
1752010
5813607×3
5831457
1754200
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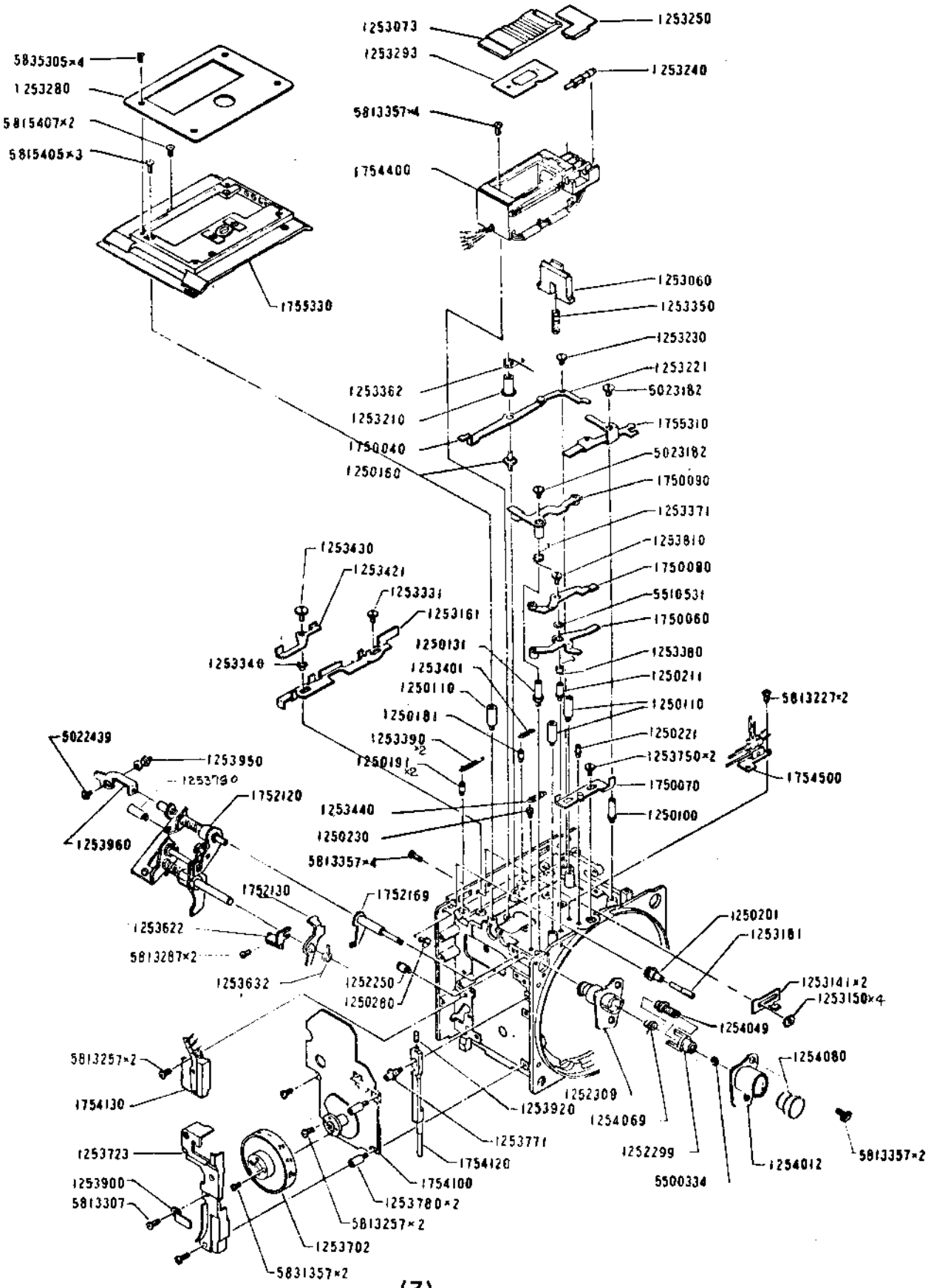
5813405×2
5813357×6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5815405×3
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1253293
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1253240
5813357×4
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1253060
1253350
1253230
1253221
5023182
1253362
1253210
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1250160
1755310
5023182
1750090
1253371
1253810
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1750060
1253380
1250211
1250110
1250221
1253750×2
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1250100
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1253331
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1253401
1250181
1253390×2
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1253440
1250230
5813357×4
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1253950
1253790
1752120
1253960
1752130
1752169
1253622
5813287×2
1253632
1252250
1250260
5813227×2
1754500
1250201
1253181
1253141×2
1253150×4
1254049
1254080
5813257×2
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1253920
1252309
1254069
1252299
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1254012
5813357×2
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1754100
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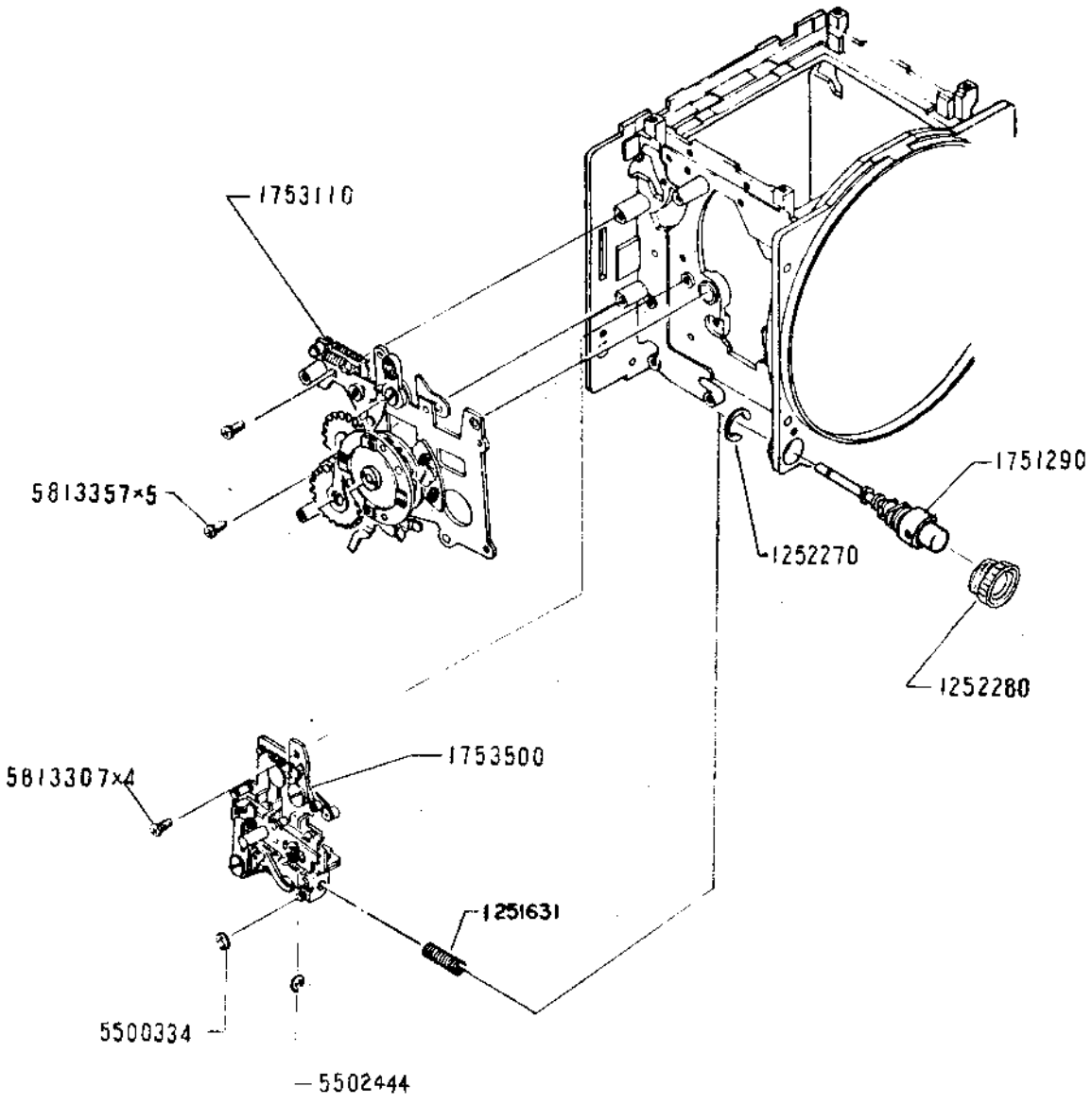
5831357×2

(3)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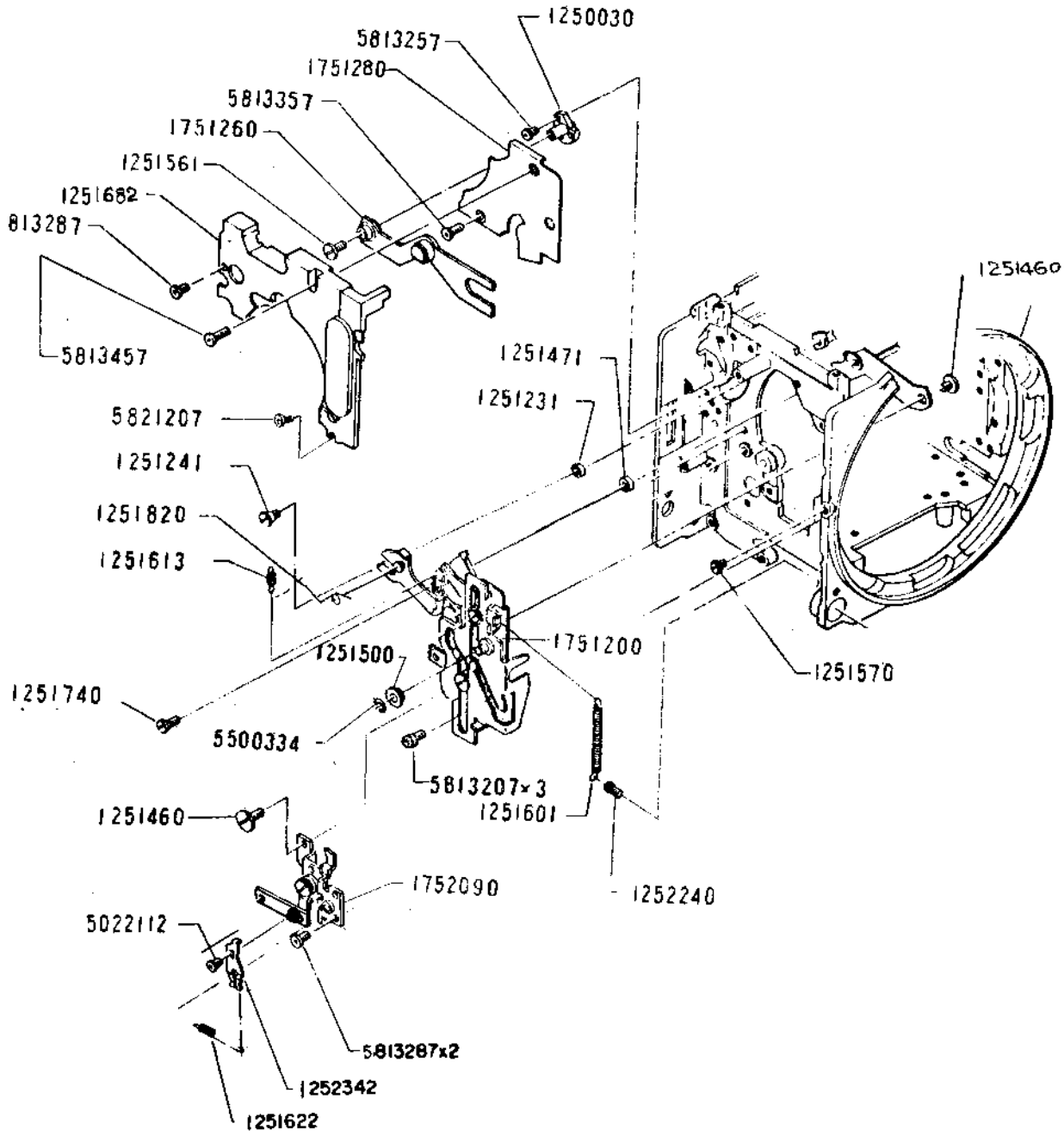
5502444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1251682
813287
5813457
5821207
1251241
1251820
1251613
1251500
1251740
5500334
5813207×3
1251460
1752090
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5813287×2
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1251471
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1251570

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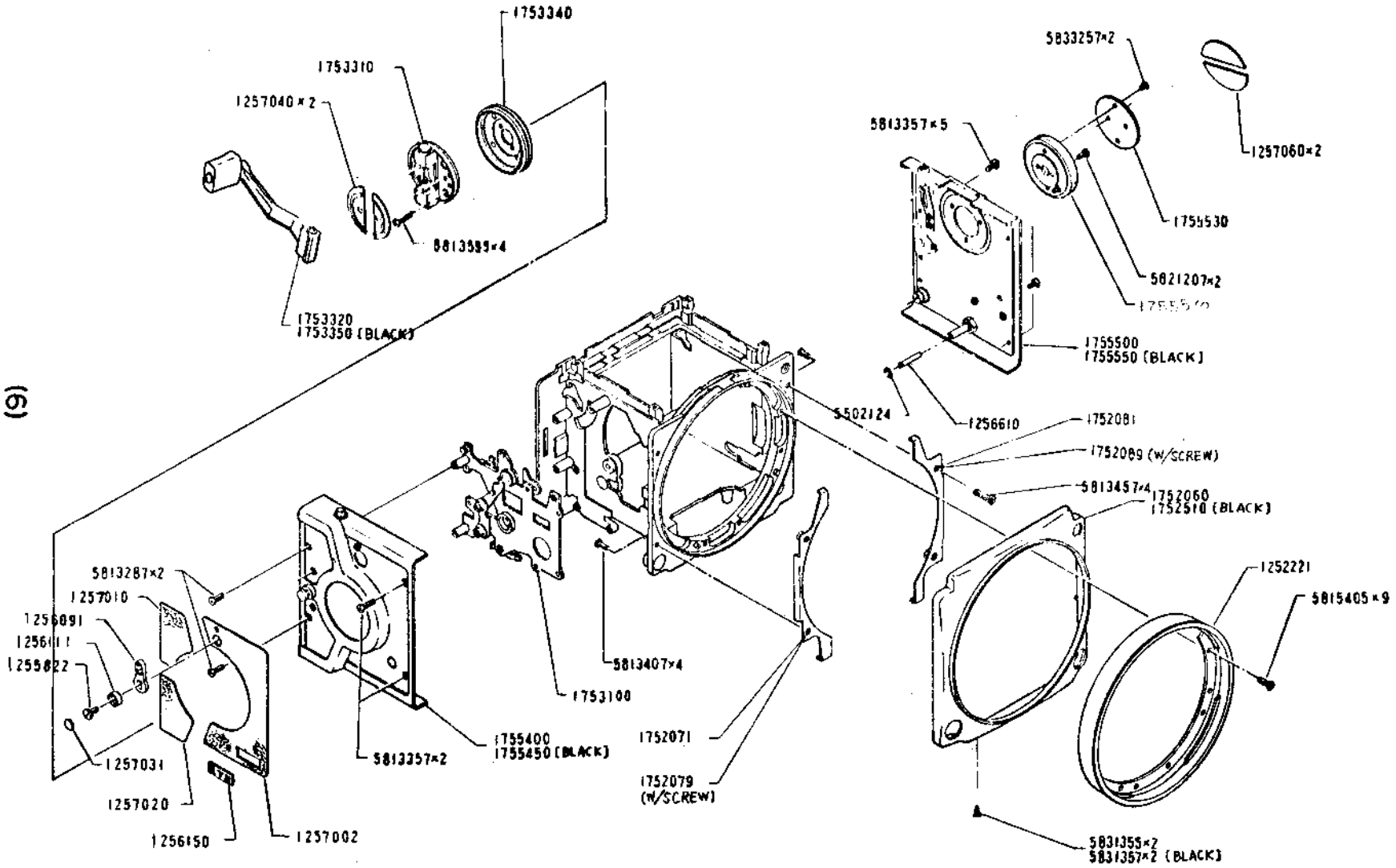
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1753310
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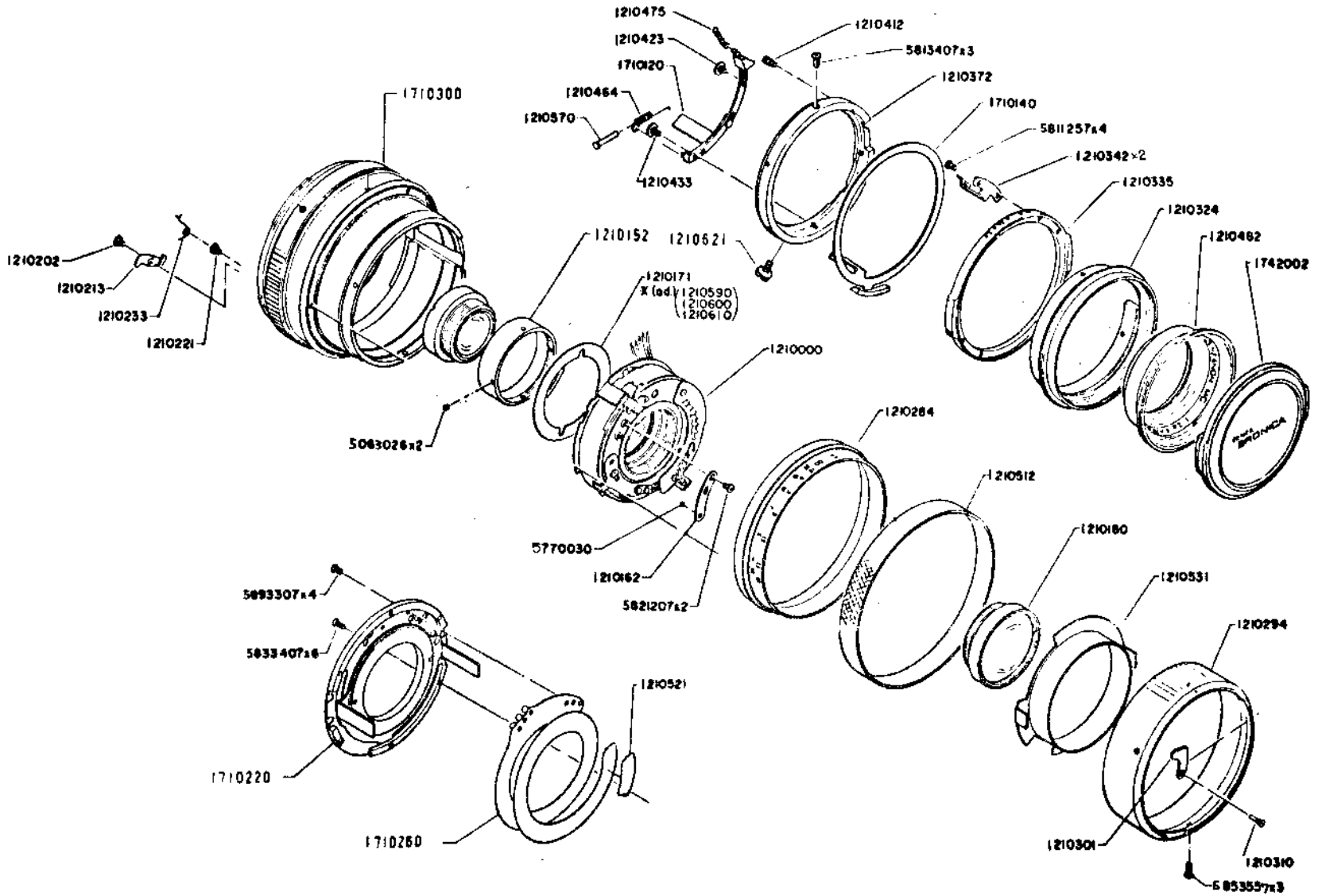
1753320
1753350 (BLACK)
5833257×2
1257060×2
5813357×5
1755530
5821207×2
1755500
1755550 (BLACK)
5502124
1256610
1752081
1752089 (W/SCREW)
5813457×4
1752060
1752510 (BLACK)
1252221
5815405×9
5813287×2
1257010
1256091
1256111
1255822
1257031
1257020
1256150
1257002
5813357×2
1755400
1755450 (BLACK)
1753100
5813407×4
1752071
1752079
(W/SCREW)
5831355×2
5831357×2 (BLACK)

(7)



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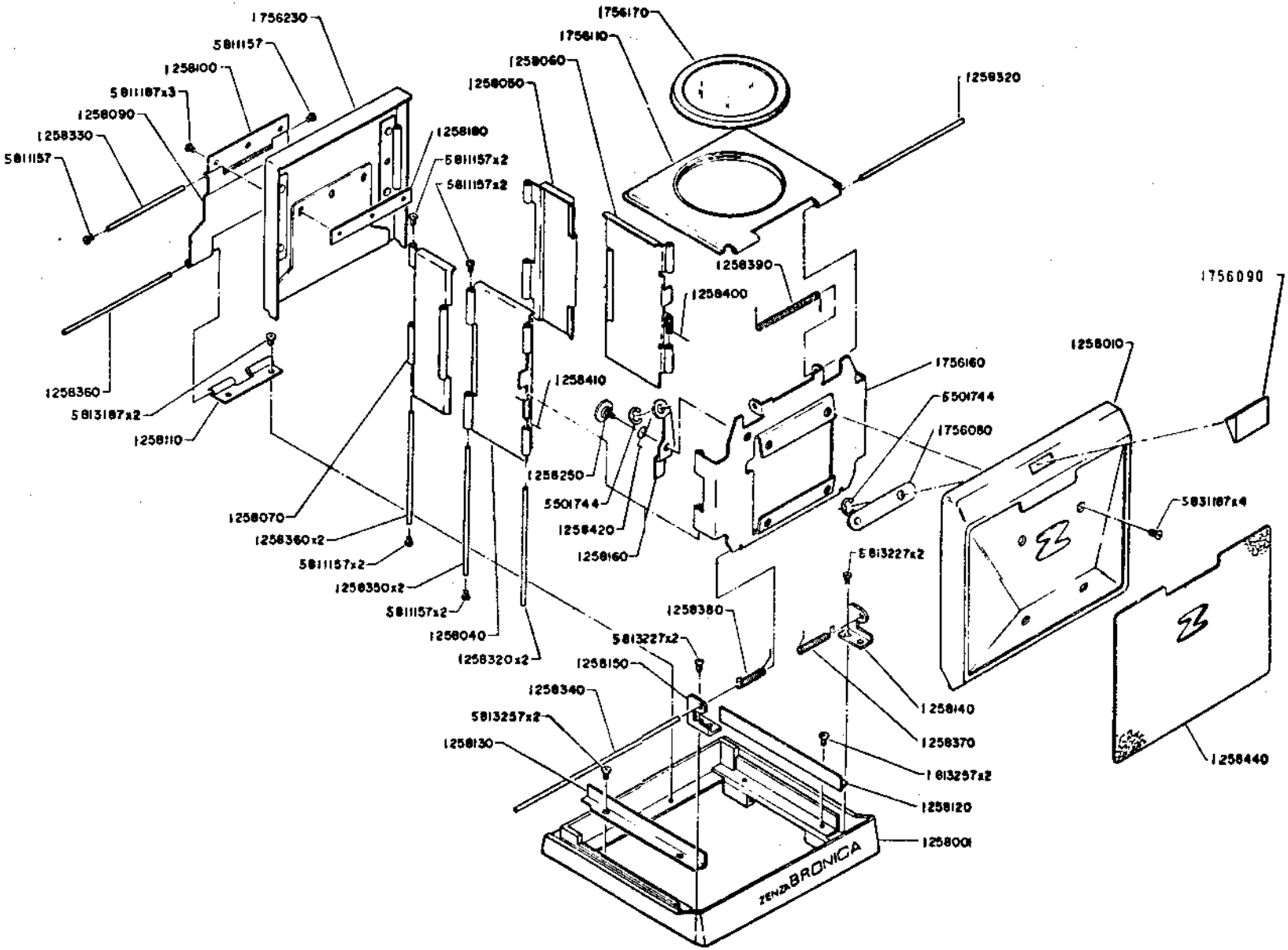
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5811157x2
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5811157x2
1258350x2
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1258320x2
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1258380
5813227x2
1258150
1258340
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1258140
1258370
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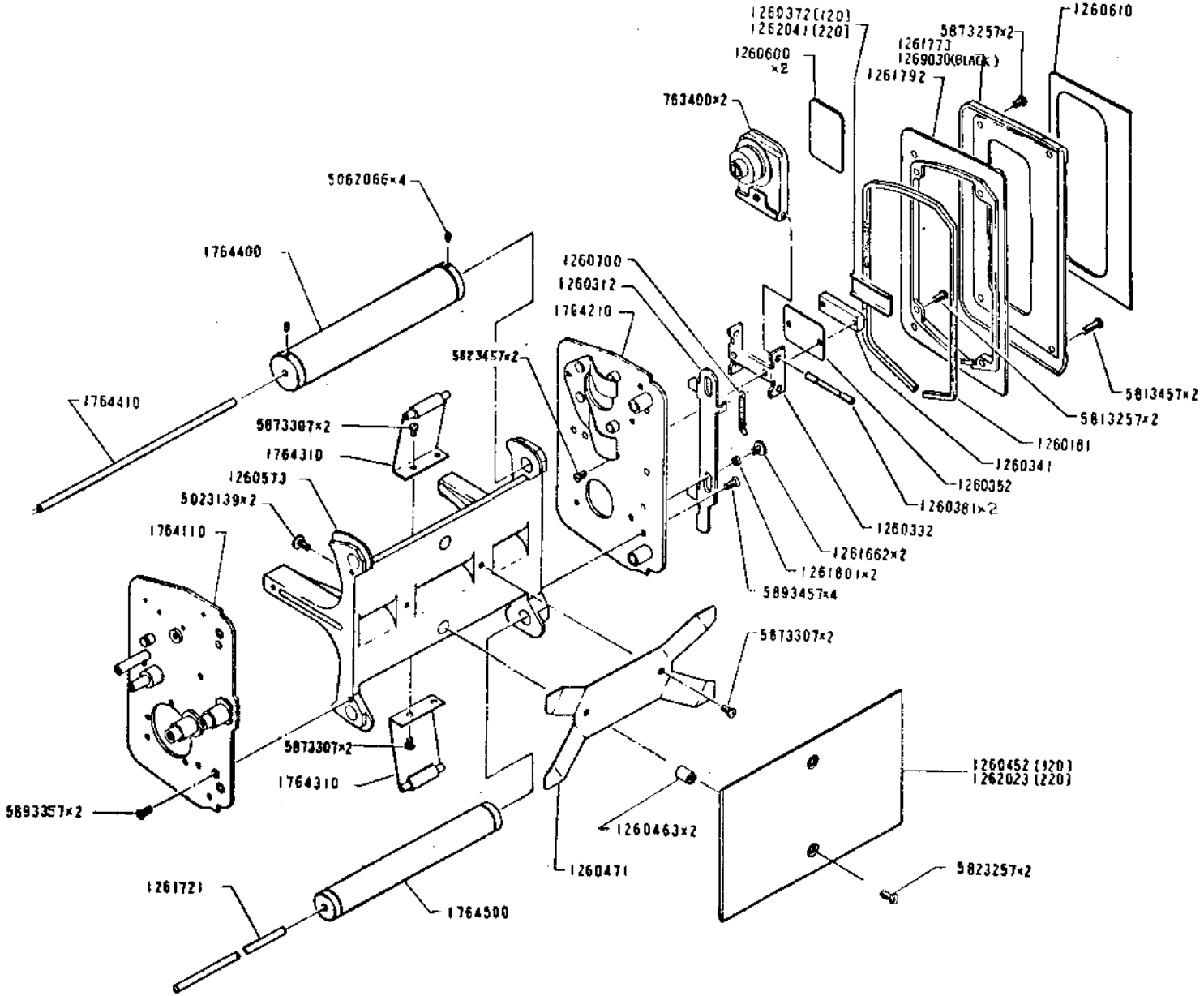
1258120
1258001
ZENZABRONICA

(8)

(6)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5873257×2
1261773
1269030(BLACK)
1261792
1260610
5062066×4
1764400
1764410
5873307×2
1764310
1260573
5023139×2
1764110
5893357×2
1260700
1260312
1764210
5873457×2
5813257×2
5813457×2
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1260352
1260381×2
1260332
1261662×2
1261801×2
5893457×4
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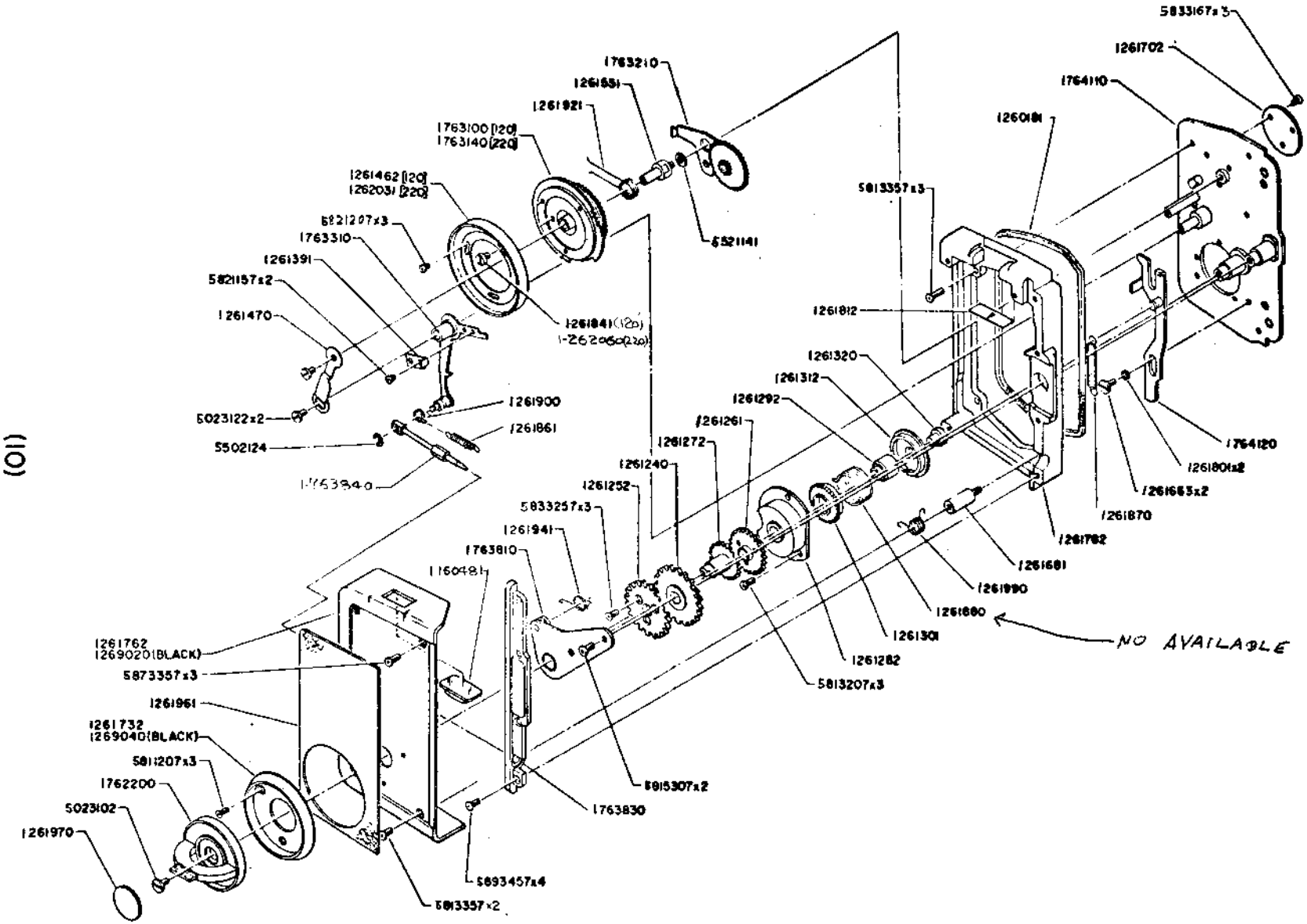
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1763100 (120)
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1262031 (220)
5821207x3
1763310
1261391
5821157x2
1261470
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1261252
5833257x3
1261941
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5873357x3
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5811207x3
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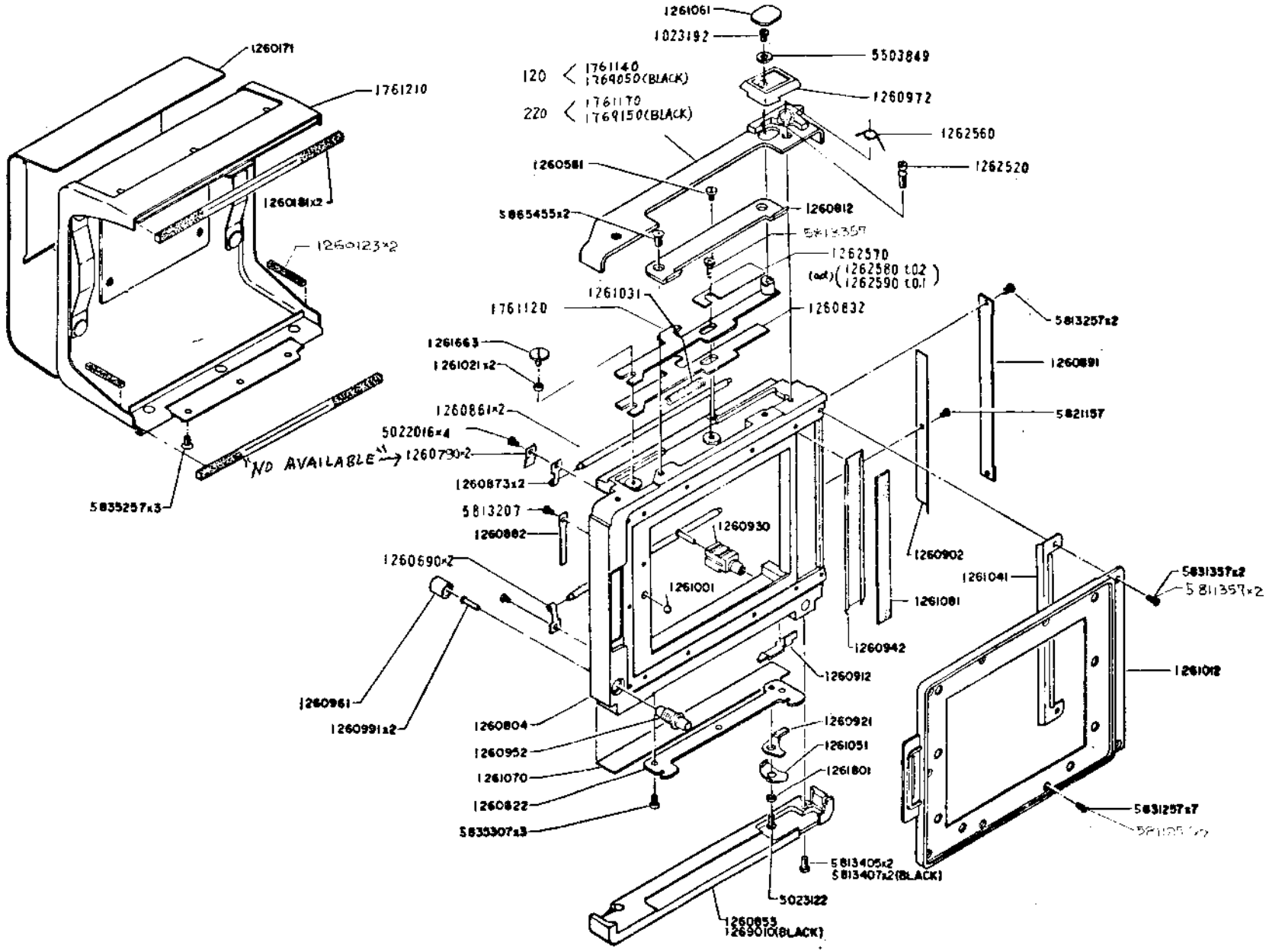
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1260181×2
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5835257×3
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1261061
1023192
5503849
120 < 1761140 1769050(BLACK)
220 < 1761170 1769150(BLACK)
1260972
1262560
1262520
1260581
5865455×2
1260812
1262570
(opt)(1262580 t0.2 1262590 t0.1)
1261031
1761120
1260832
1261663
1261021×2
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1260861×2
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5831357×2
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1260961
1260991×2
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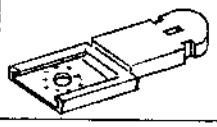
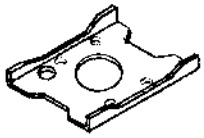
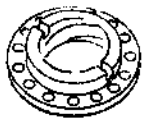
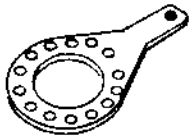
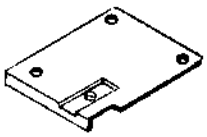
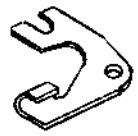
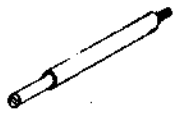
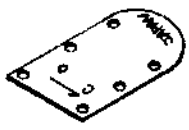
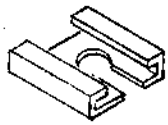
1260921
1261051
1261801
5831257×7
5813405×2
5813407×2(BLACK)
5023122
1260853
1269010(BLACK)

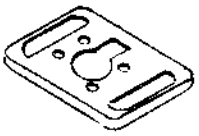
ZENZA BRONICA ETR | Speed grip

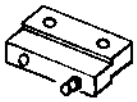
Parts No. 部品番号	Name 名　称	Shape 形　状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単　価	Remarks 備　考
1-230010	Bottom base plate 下板						
0020	Outter grip グリップ(外)					380	
0040	Pressure plate 押板					26	
0050	Leaf spring 板バネ		2			10	
0060	Lock adjusting ring 回転子					45	
0070	Locking lever 締付レバー					45	
0080	Locking lever catch 巻上手掛					10	
0111	Base plate 化粧板					60	
0121	Tripod socket 三脚ネジ					150	
0131	Safety stopper stud ストッパ止ネジ					20	
0140	Upper stopper pin ストッパピン(上)		2			20	

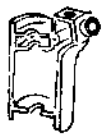
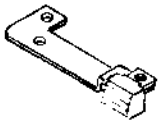
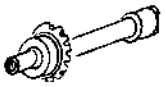
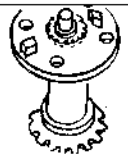
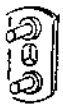
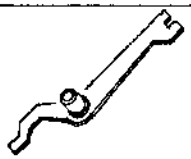
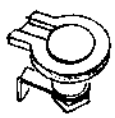
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-230150	Stopper pin stud ストッパピン(下)		2			20	
0160	Base plate stud 化粧板固定ピン					20	
0170	Grip attaching screw 下板ネジ		4			20	
0180	Grip coupling screw 合セネジ		3			20	
0221	Top Plate 巻上化粧板					15	
0250	Winding lever cover 巻上蓋					10	
0261	Fixing screw 巻上軸止					20	
0370	Spiral spring holder 巻上ゼネ掛					10	
0380	Spiral spring 巻上ゼネ				1-730050	140	
0390	Winding claw spring 巻上爪バネ		4		1-730050	20	
0400	Winding shaft bearing plate 巻上軸受押え					15	

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
I-230422	Joint shaft bearing 継ぎ軸受					60	
0430	Crank catch A 継ぎ軸A					150	
0460	Joint guide pin roller 継ぎピンカラー		2			8	
0470	Crank catch cover 巻き外輪					30	
0480	Steel ball bearing -A スチールボール受 A					30	
0495	Steel ball bearing -B スチールボール受B					120	
0501	Ball bearing setting screw スチールボール受ネジ					20	
0511	Joint shaft setting screw 継ぎ軸A止					20	
0630	Release pin レリーズピン					20	
0640	Crank A roller レリーズコロ					8	

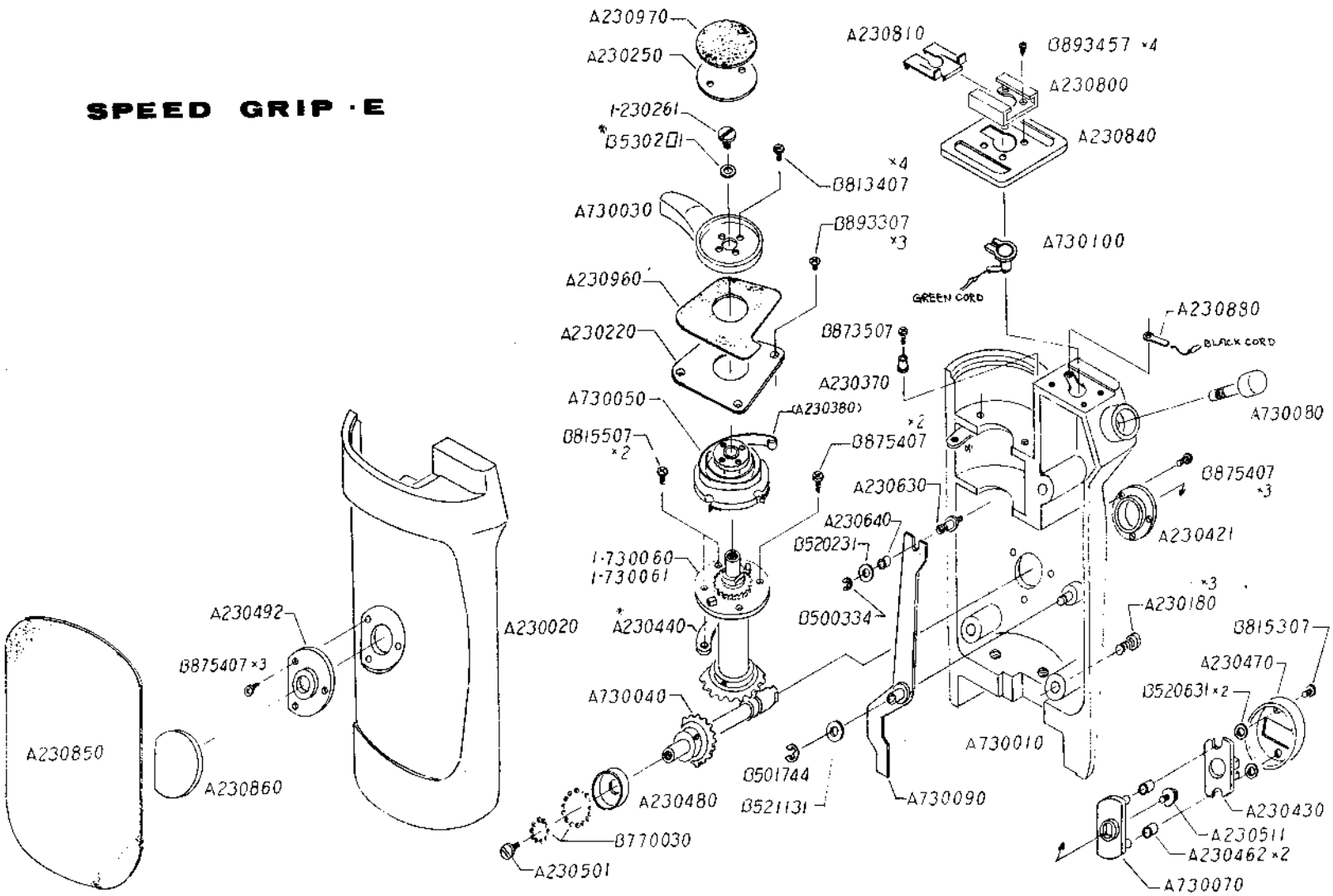
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-230680	Crank B クランクB					40	
0690	Release pin guide レリーズピンガイド					40	
0700	Crank B axle クランクB軸					25	
0710	Release pin A レリーズピンA					30	
0720	Release pin B レリーズピンB					30	
0730	Release guide pin レリーズガイドピン					20	
0740	Release guide pin roller レリーズコロ					8	
0750	Crank B spring クランクBバネ					20	
0790	Bottom plate 底蓋					160	
0800	Shoe mount シュー座					80	
0810	Shoe base plate シュー化粧座					20	

Parts No. 部品番号	Name 名称	Shape 形状	Pcs.per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-230840	Shoe mount ring 化粧リング					30	
0850	Leatherette グリップ外革					40	
0860	Grip spacer グリップ外革下					30	
0881	Contact piece シューラグ板		2			5	
0890	Shoe mount cover シュー蓋					30	
0911	Strap metal ストラップ金具					120	
0920	Strap metal nut ストラップナット					5	
0931	Set screw ストラップネジ					5	
0950	Rubber 下板ゴム					20	
0960	Leatherette 地上化粧革					15	
0970	Leatherette 地上裏革					15	

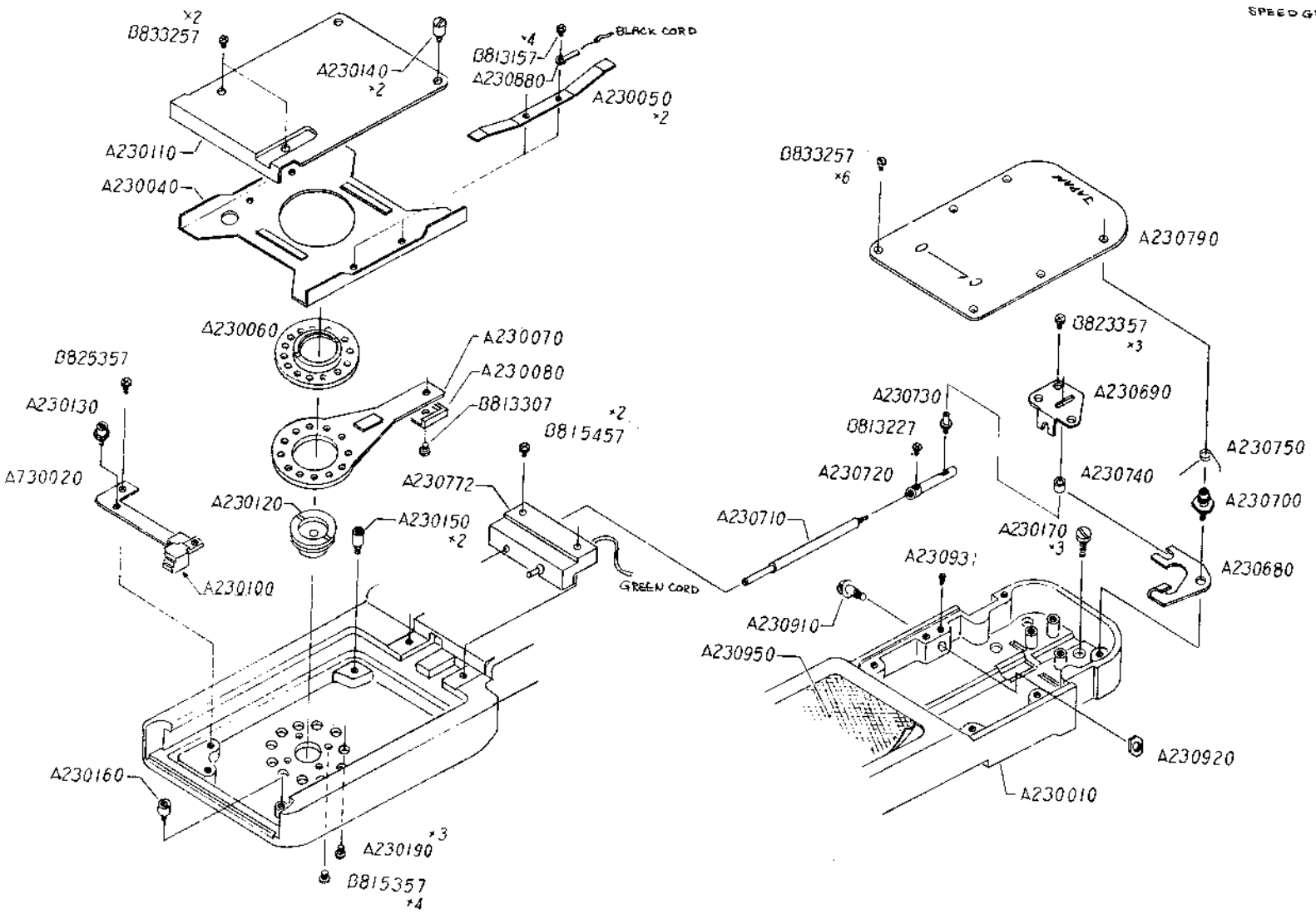
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price (¥) 単価	Remarks 備考
1-230190	Adjusting ring screw 回転子止ネジ		3			8	
0590	Release button ring レリーズボタンリング				1-730010	90	
0600	Button ring nut ボタンリング止ネジ				1-730010	15	
0772	Contact base 接点板					60	
0100	Stopper ストッパー				1730020	20	

Parts No. 部品番号	Name 名称	Shape 形状	Pcs.per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
I-730010	Inner grip グリップ(内)					480	
0020	Safety stopper ストッパ板セット					60	
0030	Winding lever 巻上レバーセット					240	
0040	Joint shaft set 継手軸セット					420	
0050	Winding wheel w/spring 巻上輪セット(スプリング付)					540	
0060	Winding shaft set 巻上軸セット					1,200	
0070	Joint guide 継手ガイドセット					75	
0080	Release button レリーズボタンセット					40	
0090	Crank A クランクA					55	
0100	Hot shoe set シュー接点セット					80	

SPEED GRIP · E


A230970
A230250
1-230261
*B530201
B813407 ×4
A730030
B893307 ×3
A230960
A230220
A730050
(A230380)
B815507 ×2
B875407 ×2
1-730060
1-730061
*A230440
A730040
A230480
B770030
A230501
A230492
B875407 ×3
A230020
A230850
A230860
A230810
B893457 ×4
A230800
A230840
A730100
GREEN CORD
A230880
BLACK CORD
B873507
A230370
A730080
A230630
A230640
B520231
B500334
B875407 ×3
A230421
×3
A230180
B815307
A230470
B520631 ×2
A730010
B501744
B521131
A730090
A230430
A230511
A230462 ×2
A730070

SPEED GRIP


B833257 ×2
A230140 ×2
B813157 ×4
BLACK CORD
A230880
A230050 ×2
A230110
A230040
A230060
A230070
A230080
B813307
B815457 ×2
B825357
A230130
A730020
A230120
A230150 ×2
A230772
A230100
GREEN CORD
A230160
A230190 ×3
B815357 ×4
B833257 ×6
A230790
B823357 ×3
A230690
A230730
B813227
A230720
A230710
A230750
A230740
A230700
A230170 ×3
A230931
A230680
A230910
A230950
A230920
A230010

Zenza BRONICA®

ETR

REPAIR MANUAL

ZENZA BRONICA IND., INC.

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1. Detachment of the Right Side Cover

How to Detach

1) Strip off two crank base covers (A257040) which are fixed to the surface of the crank base casting (A753320) with bonding agent and then loosen four fixing screws (B813605). Finally, detach the parts up to the crank ring set (A753340).
2) Strip off the leatherette on the multi-exposure lever (A256091), loosen the fixing screw and then detach the multi-exposure lever.
3) Strip the leatherette from around four screws or two B813357 and two B813287, loosen these four exposed screws and, finally, detach the right side cover (A755400).

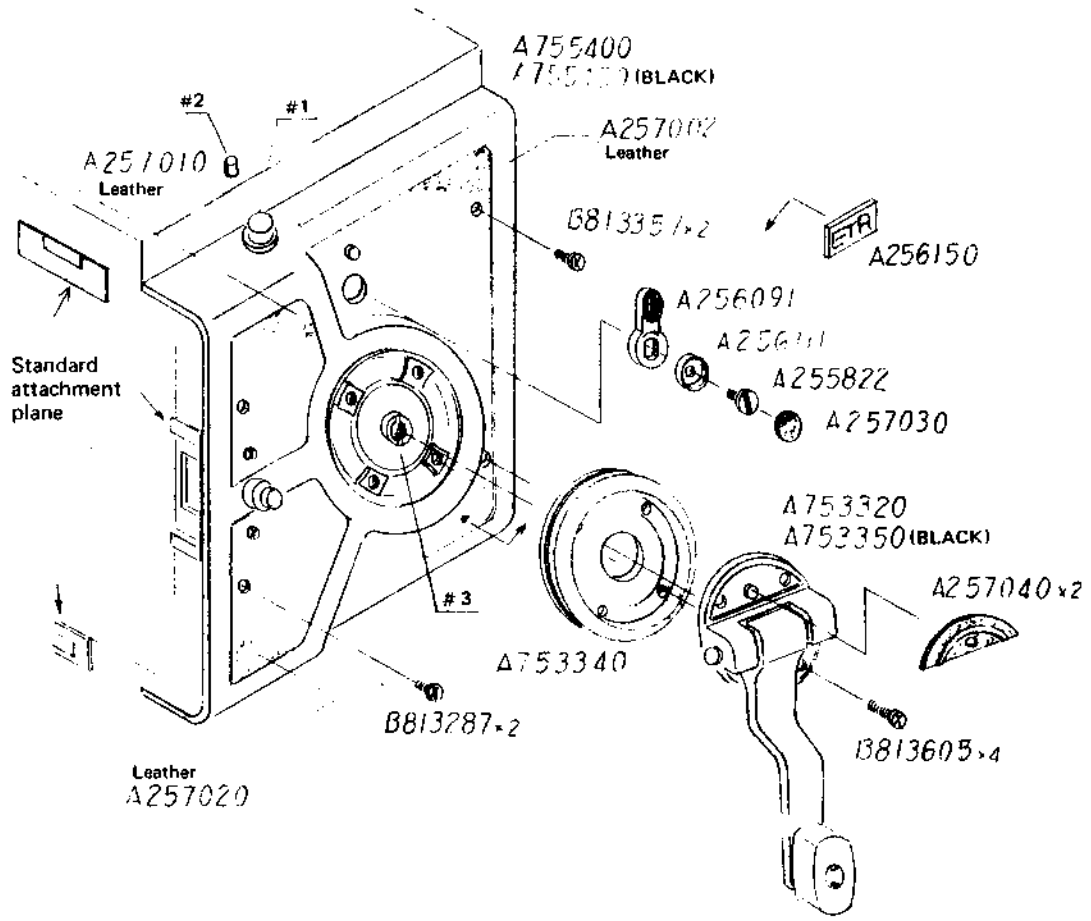
CAUTION:

The crank base covers are deformed rather easily and, therefore, it is recommended that spares always be held on hand for exchanging.

How to Attach

Attachment is in the reverse order of the above, but keep the following points in mind, when doing so:—

1) The right side cover should be located while depressing the finder locking pin (#2) in order that the pin can be located for coupling with the finder release button (#1).
2) The crank ring set must be positioned concentrically with the crank base casting, or with equal spacing all around it, in order to prevent contact with the right side cover which should, in turn, not protrude beyond the base surface (attachment of the film back will help in determining the location at this time and the winding crank should also be revolved to confirm positioning).

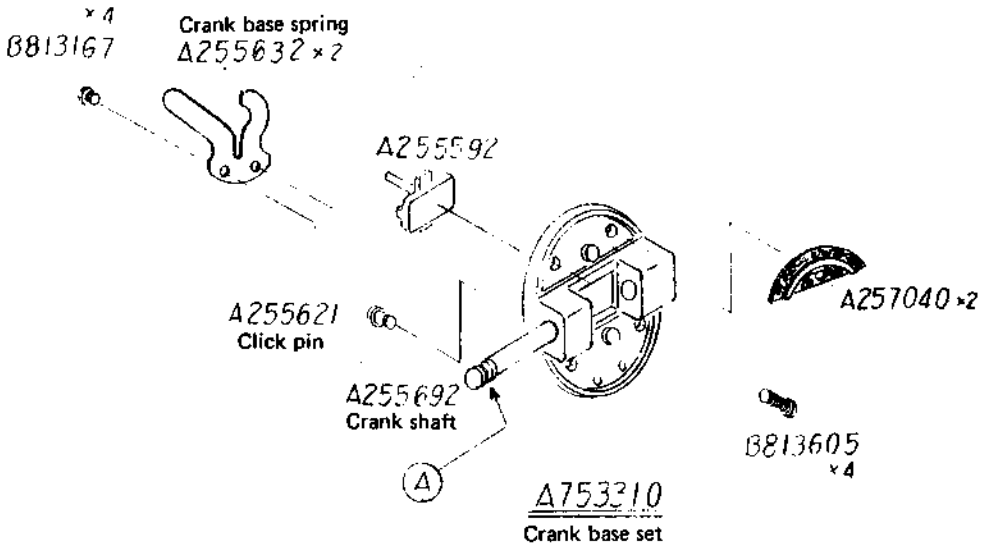


2. Film Winding Cranks Comes Off: Crank Shaft Slips Out Easily

The crank shaft (A255692) is securely fixed in position only when the click pin (A255621) is inserted fully in the groove (A) on the crank shaft.

1) Strip off the two crank base covers (A257040), loosen four fixing screws (B813605) and detach the crank base set (A753310). Next, bend the crank base spring (A255632) so that it exerts more pressure on the click pin.

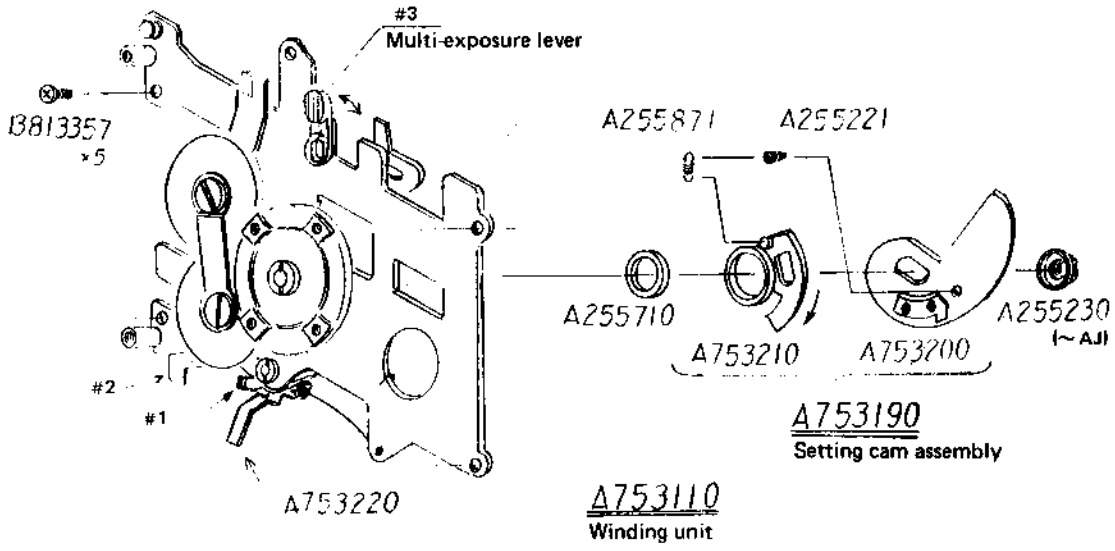
Fig. 1



3. Multiple Exposure is not Possible

The multiple exposure mechanism is activated by setting the multi-exposure lever (#3) or rotating it in the clockwise direction, which disconnects gears on the body side from those on the film back side, so that the film is no longer advanced with film winding crank action. At the same time, although the film is no longer being advanced, the multiple exposure mechanism stops the film winding and shutter charging action and permits shutter release when operations are completed on the body side only.
If multiple exposure is not possible, when set in the above manner, but becomes possible when the multi-exposure lever (#3) is reversed once (to normal single exposure operation) and then re-set for multiple exposure, the movement of the winding auxiliary plate (A753210) is defective. Winding is not possible, in the first instance because the winding claw (#1) engage the setting cam (A753200) even after the shutter is released.
Repair in the following manner: –

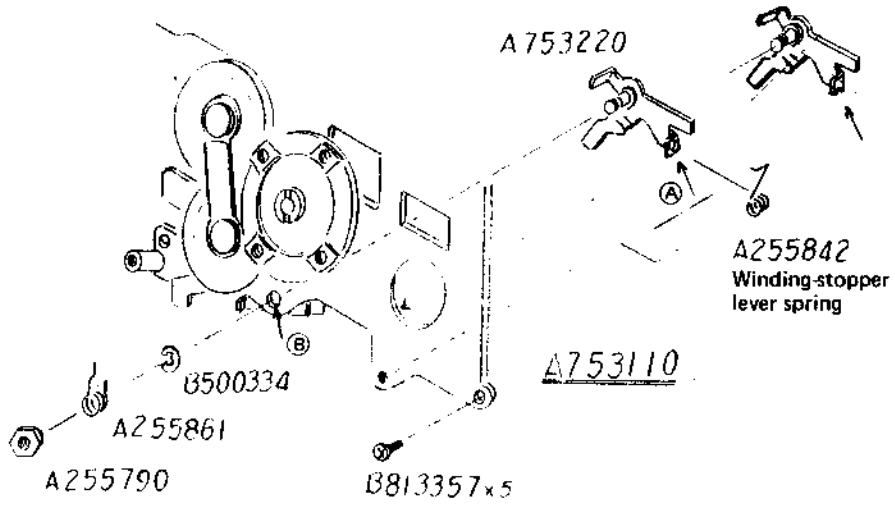
1) Detach the right side cover, loosen five B813357 screws and take out the winding unit (A753110).
2) Detach the cam holding nut (A255230) and then detach the setting cam assembly (A753190). Finally, replace with a new setting cam assembly.
3) When reattaching the winding unit in the body, see that the winding stopper lever (A753220) and #2 engage with the F. (film) release unit. (See Exchanging the Film Release Unit on page 8.)



4. Winding Action does not Stop: Winding Stopper Lever Spring is Unhooked

Load a test roll film in the film back and manipulate the winding crank (and advance the film and charge the shutter) for taking the first frame. Then, detach the film back and check whether the F. (film) release pin (A260990) is protruding up to the front end of the F. release cylinder A (A260952) (see page 33). If the pin is not protruding correctly, correct according to "Film Back — 6. Winding Action does not Stop".

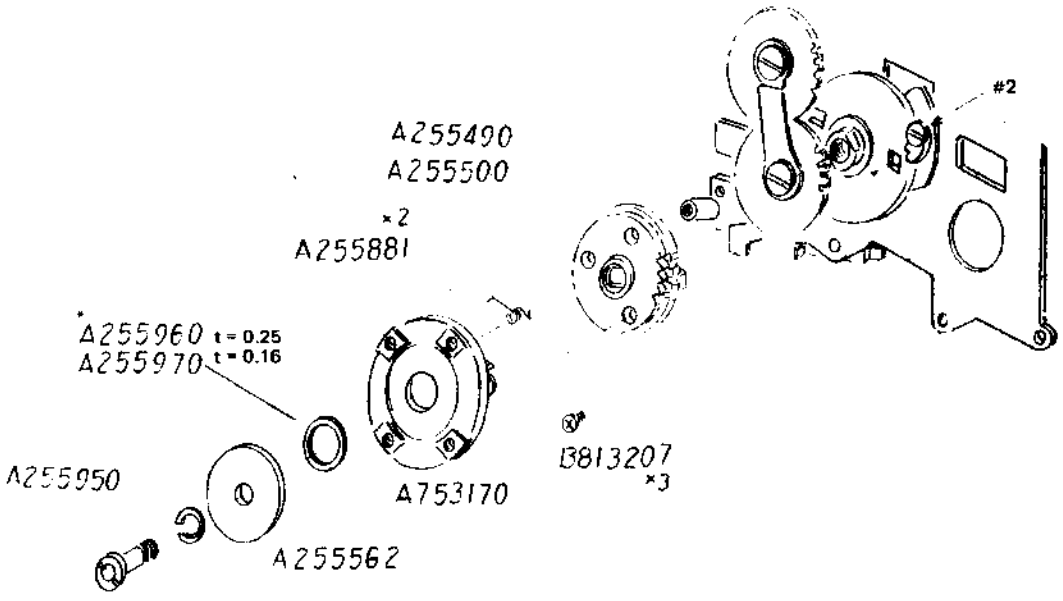
1) Detach the right side cover. If the winding stopper lever spring is unhooked, it will be quite all right to hook it up once more but since it is liable to get unhooked again, it is recommended that the following repair be undertaken.
2) Loosen five B813357 screws and detach the winding unit (A753110).
3) Loosen the winding stopper claw spring holder (A255790) with the special screwdriver (A255790-AJ), take off the snap ring "type E" (B500334) and, then, detach the winding stopper lever (A753220).
4) Obtain a new winding stopper lever replacement part (which has a round opening in the place indicated by the (A) arrow) and assemble it into the body. When using the new replacement part, however, enlarge the opening on the winding base plate assembly, as indicated by (B) arrow, to 2 mm diameter.
5) Refer to page 8 for reattachment of the winding unit.



5. Winding Crank is very Loose: Main Shaft Setscrew is Loose

Strip off the crank base covers (A257040) and check whether the 8813605 screws are loose or not. (See page 1.)

1) If looseness in the winding wheel (A753170) can be corrected by tightening the main shaft setscrews (A255572), detach the setscrew, apply Loc-Tite to the threads and re-tighten the main shaft setscrew securely once more.



6. Winding Action is not Possible: Transmission Gear is Cracked

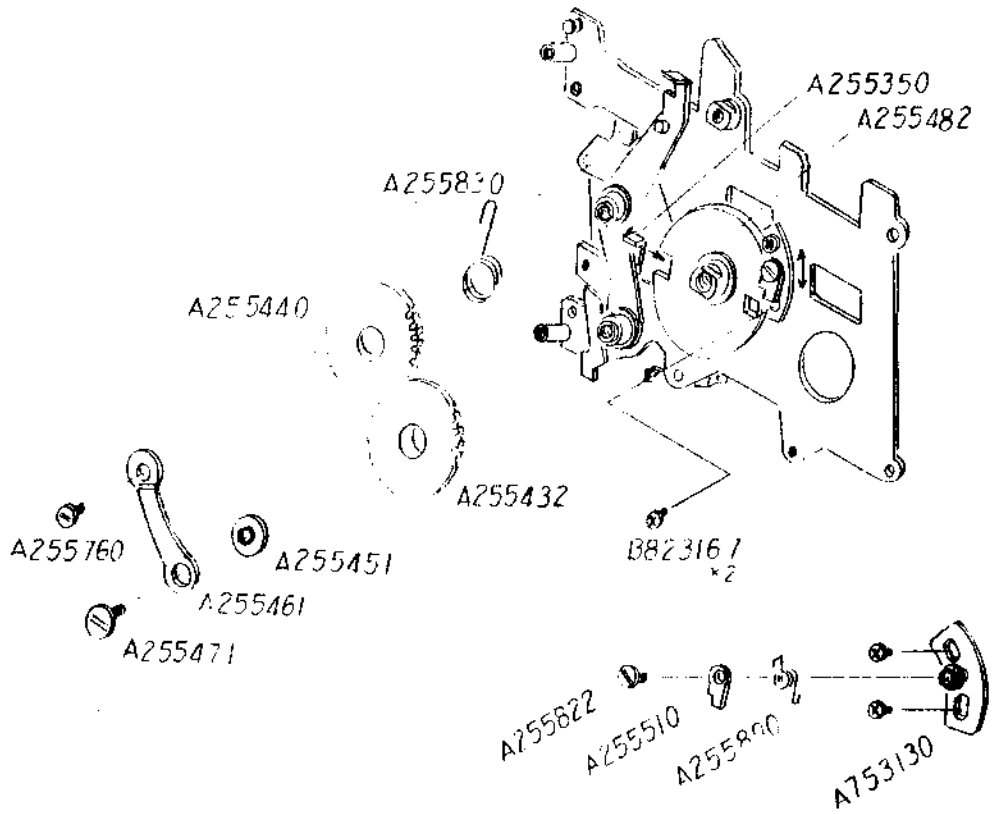
If the cracked transmission gear (A255432) is a white-colored plastic one, exchange it for a metal replacement part.

1) Loosen the connecting gear screw (A255760) and left hand gear arm screw (A255471), detach the upper connecting gear arm (A255461) and exchange the transmission gear.

7. Shutter Release Button cannot be Depressed: Reverse Stopping Claw is Positioned Incorrectly

When the shutter release button is depressed, after completion of the film winding crank action, the upper release safety lever (A255350) should fall into the notched section on the release safety cam (A255482) which will release the shutter. In other words, if the lever is not in the notched section but positioned elsewhere, the shutter cannot be released when the shutter release button is depressed.

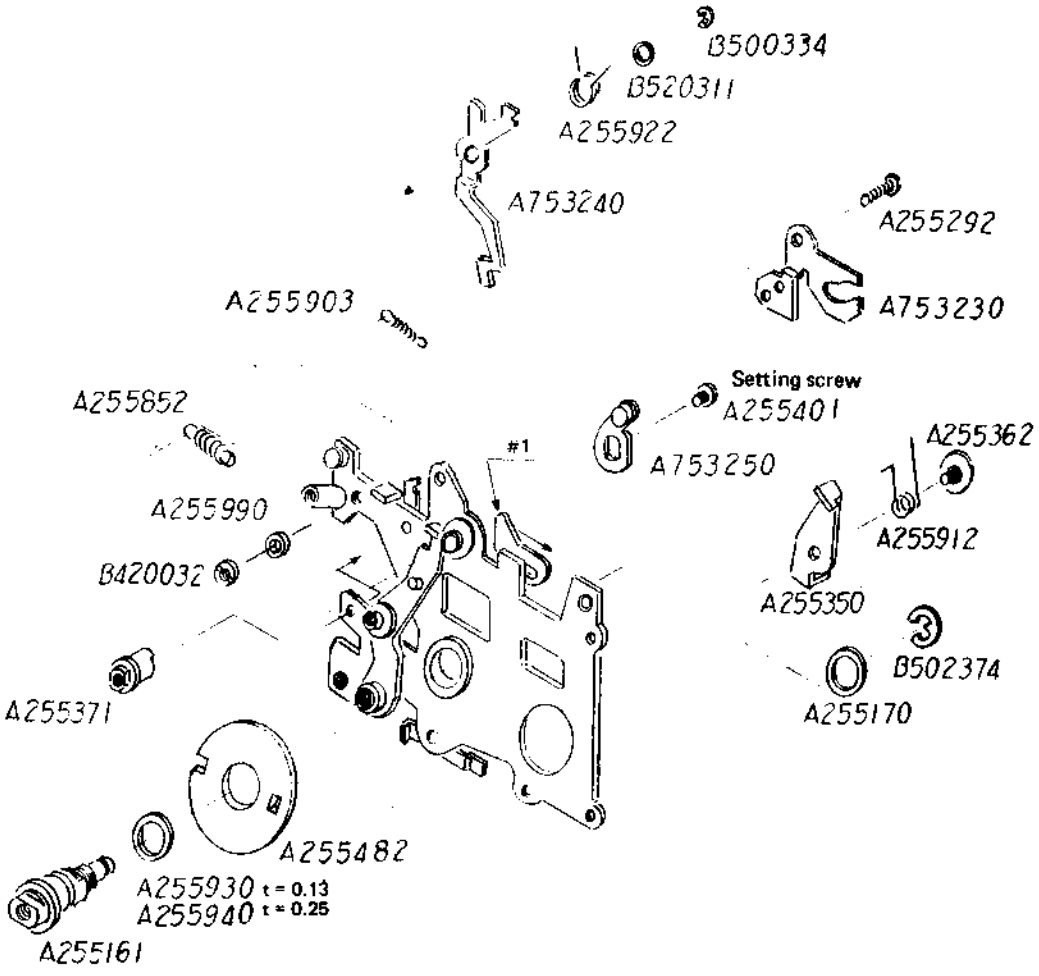
1) Loosen the B823167 screws and adjust the reverse stopping claw mount (A753130) so that the upper release safety lever falls into the notched section on the release safety cam.
   Confirm that the same action also takes place when the winding crank is rotated in the reverse direction, too.



8. Multiple Exposure is not Possible: Setting Screw is Loose

The multi-exposure lever (see page 1) rotates the multi-set lever (A753250) via the multi-lever axle (A255371) and, thereby, pushes the multi-exposure link (#1) forward or in the direction of the lens.

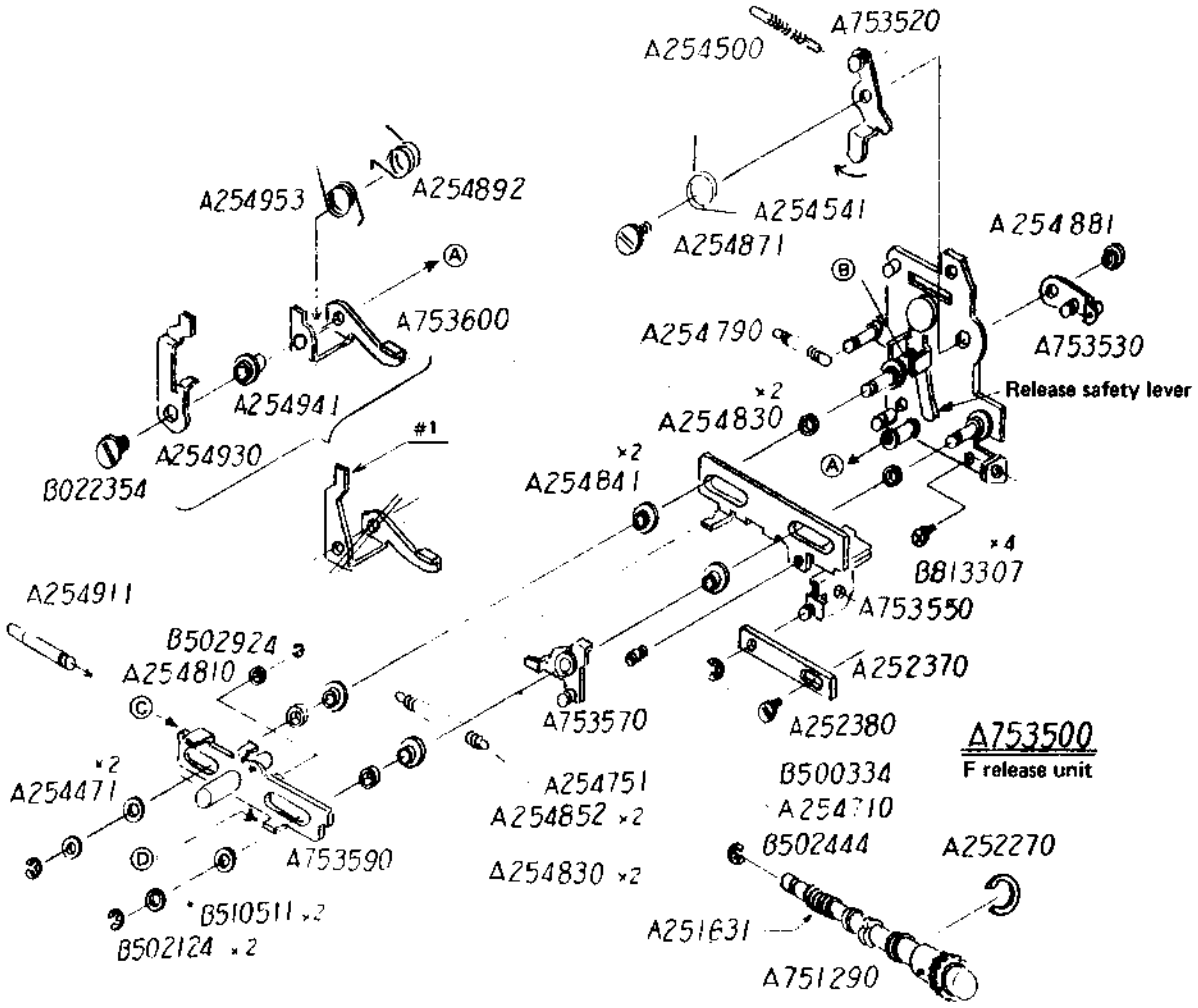
1) The setting screw (A255401) should be fixed securely with Loc-Tite.
2) Exchange the multi-operating lever spring (A255922) when it is unhooked, if its hooking section is deformed.



9. Exchange of the Film Release Unit

F. release unit with an old type winding safety lever (#1) attached should be exchanged completely for a new type one, in order to prevent deformation of the wind stopper pawl (A261391).

1) First, detach the winding base plate assembly, then detach the shutter button stopper ring (A252270, B502444) of the shutter release button set (A751290) and the snap ring (B500334) of the shutter release link (A252370), loosen four B813307 screws and, finally, detach the F. release unit (A753500).
2) Keep the following points in mind when attaching the winding base plate assembly, after attachment of the replacement F. release unit.
3) The upper release safety lever (A255350, see page 7) must fit into (B).
4) The multi-operating lever (A753240, see page 7) must engage (C).
5) The winding stopper lever (A753520, see page 4) must engage (D).
6) The holding claw (A753570) engages the F. release roller (A254810) while the shutter release button is being depressed and prevents the return of the upper F. release plate (A753590) so that there is time for the F. release action to take place. If the holding claw does not engage the F. release roller, then bend the upper F. release lever (A753520) in the arrow-indicated direction.



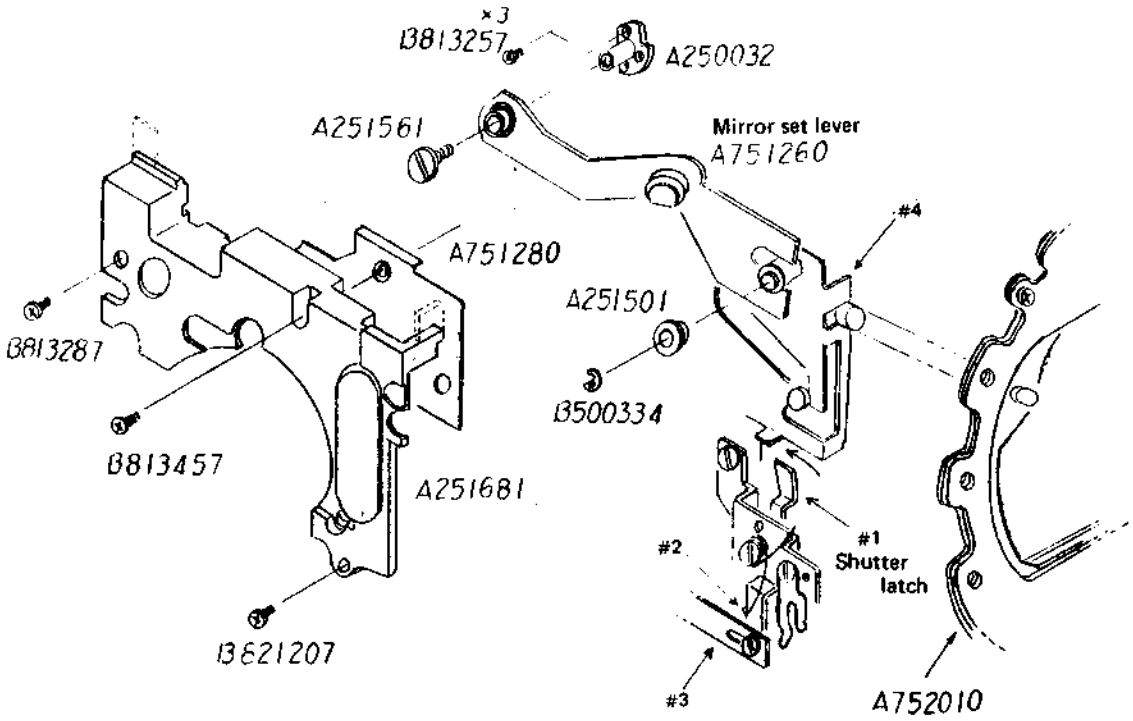
10. Mirror is not Charged: Bent Mirror Set Lever and/or Faulty Action of the Shutter Latch

Reflex mirror swings back up immediately upon completing the film winding crank action.

1) Check action of the shutter latch (#1).
2) Next, loosen screws B813287, B813457 and B821207 and then detach the light baffle cover (A251681). (The old type light baffle cover also has a protrusion, as indicated by the broken-line part, and, therefore, it will be necessary to loosen the top frame (A755200), also, in this case. Refer to page 19.)
3) Detach the set lever screw (A251561, which has a left hand thread) and take off the snap ring (B500334) and operating plate set roller (A251501). Finally, exchange the mirror set lever (A751260).
4) When exchanging the set lever shaft (A250032) use a part matching the height of the set lever.

CAUTION:

A bent set lever is caused by mistakes made during the insertion of the lens. If the film winding crank action is heavy, when assembling the set lever, therefore, do not force the action. (Refer to page 15" Lens Cannot be Detached".)



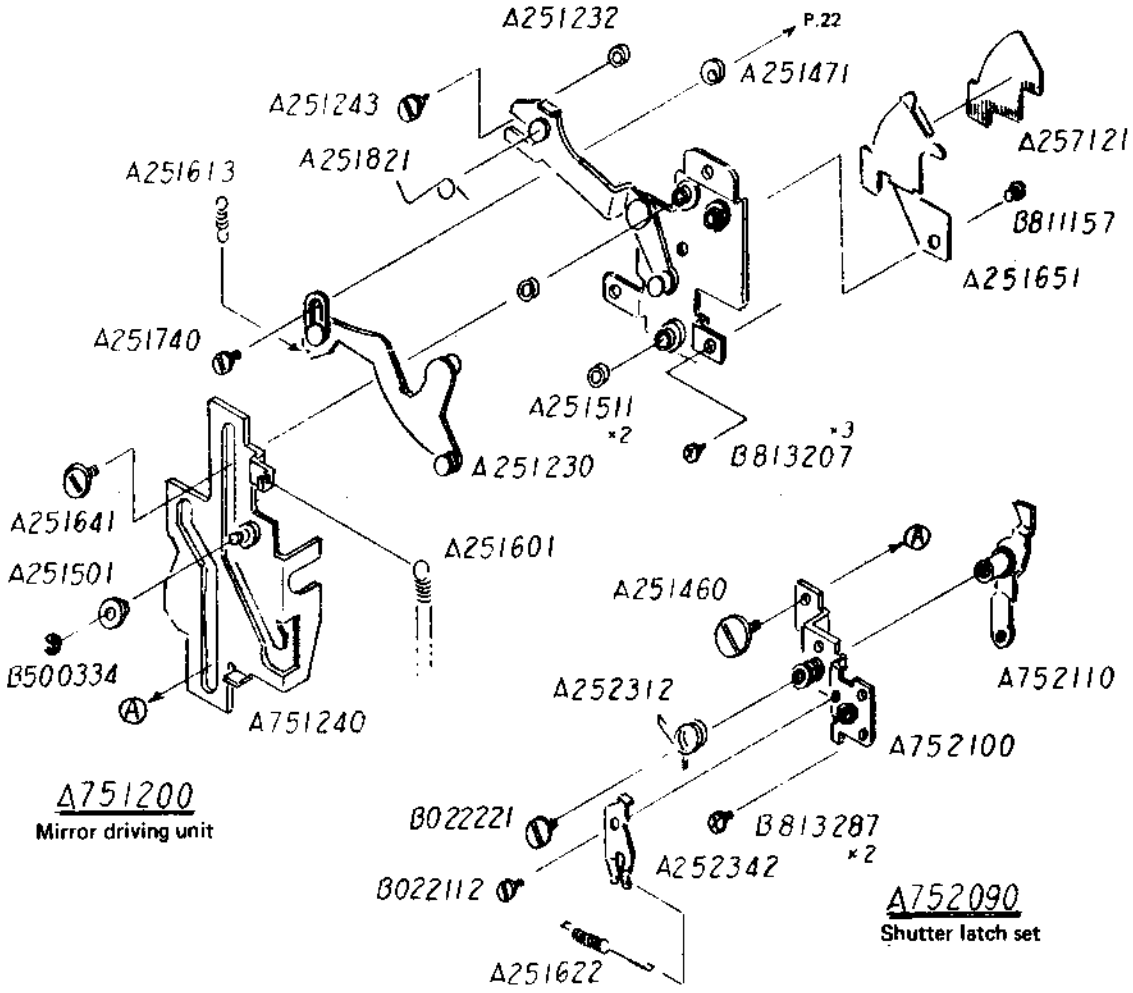
11. Shutter Blades do not Open (I)

The shutter blades close down completely when the shutter release button is depressed, while, at the same time, the reflex mirror swings up. Then, the light-tight plate (A751100) also swings up, followed by the shutter blades reopening and, after the required amount of time, closing completely once more. Should the shutter blades not reopen after the light-tight plate swings up, resulting in an unexposed frame, it should be repaired in the following manner.

1) Exchange the right operating-ring spring (A251601) since it has been strengthened by increasing its wire diameter to 0.26 mm.
2) Exchange the shutter operating ring unit (A752010) (see page 11).

12. Adjustment of the Mirror Arm Adjusting Cam (A251471)

When making the repair noted in "11. Shutter Blades do not Open (I)", position the M. (mirror) arm adjusting cam so that the M. operating plate (#1) moves up and down smoothly.
At the same time, the M. arm adjusting cam should not come in contact with the M. driving lever (#2) when the mirror swings up.



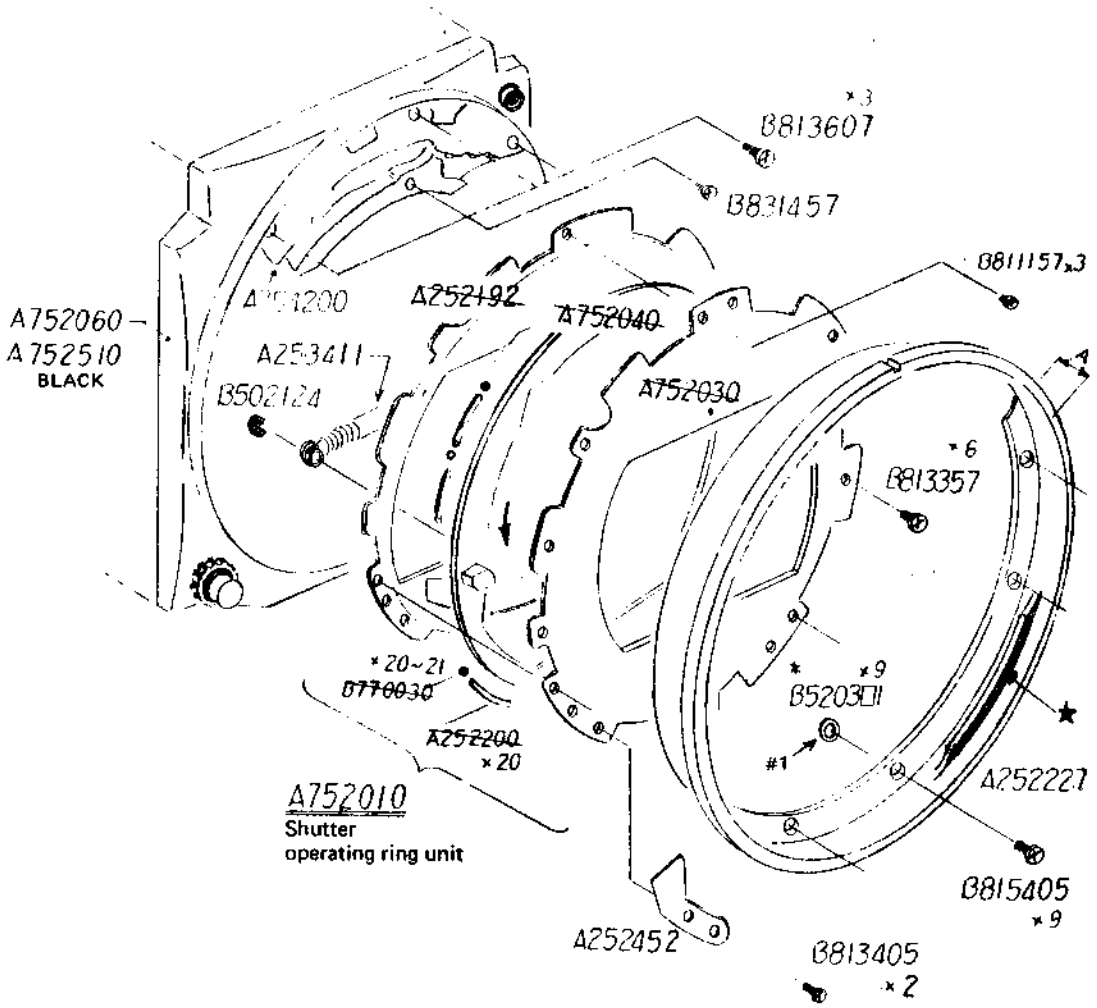
13. Shutter Blades do not Open (II): Rotation of the Shutter Operating Ring Unit is Heavy

With lens detached, check rotation of the S. (shutter) operating ring unit (A752010) in the arrow-indicated direction while maintaining pressure on the shutter release button. If the rotation is not smooth but feels tight or seems to be catching, it should be repaired in the following manner:–

1) Loosen nine B815405 screws and detach the lens mount (A252227). Since the focus adjustment washers (#1) differ in thickness, they must be properly identified so that they can be returned to their original positions when reassembling.
2) Loosen two B813405 screws, three B813607 screws, one B831457 screw and six B813357 screws.
3) Detach the left side cover (see page 12), unhook the operating-ring spring (A253411) and exchange the S. operating ring unit. Use a spring with 55 turns.

Adjust distance from standard attachment plane (surface) to the star-indicated (*) position on the lens mount to 79 mm ±0.03. (Use tooling jigs CT-301, 302 and 303.)

Use care when making the exchange, as there are two types of lens mounts with thickness of 9.6 mm and 9.65 mm at point "A".



14. Detachment of the Left Side Cover Add Shutter Speed Dial Stopper

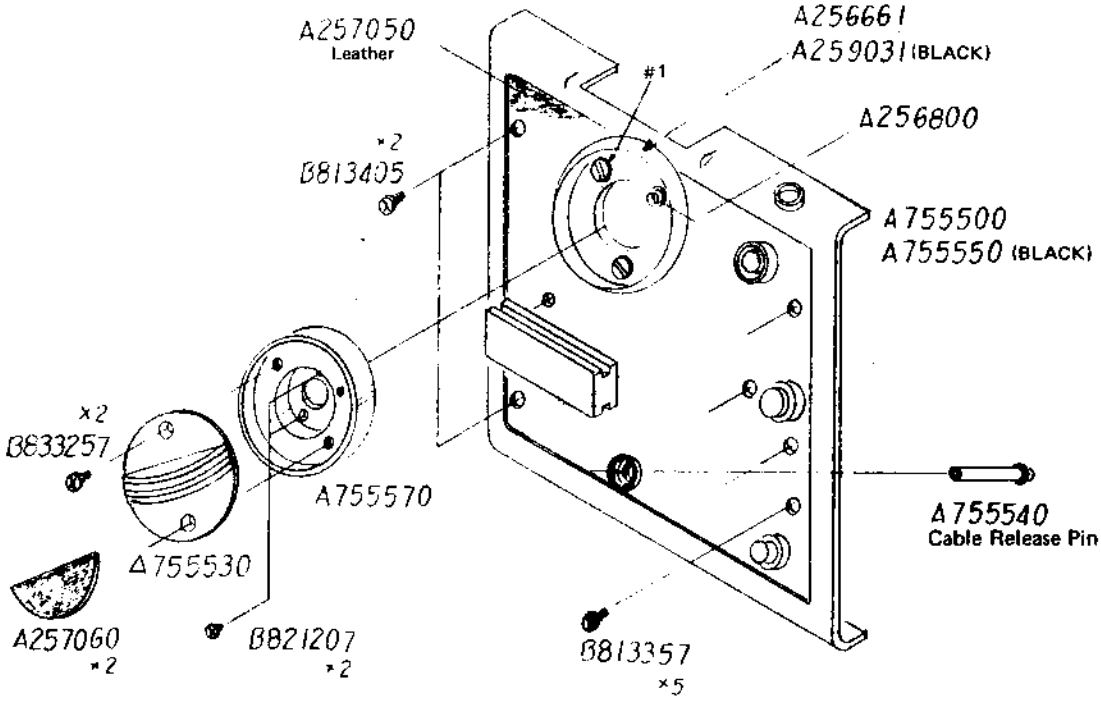
1) Strip the shutter dial cap leatherette (A257060) and loosen two B833257 screws. Then, detach the shutter dial cap (A755530) and loosen two more screws (B821207). Finally, detach the shutter dial knob (A755570).
2) Strip off enough of the left cover leatherette (A257050) to expose the screws, loosen two B813405 screws and five B813357 screws and, then, detach the left side cover.
3) Place the cable release pin (A755540) aside for safekeeping since it will become loose when the left side cover is detached.

Add shutter dial stopper

1) Change one of the setscrews (#1) of the shutter dial cover (A256661) to the shutter dial stopper (A256800) and change the shutter dial knob to part A755570 (which has a stopper pin riveted to it).

Pointers on Assembling

1) Do not forget the cable release pin.
2) The circuit is grounded (earthed) at two points at the front end and, therefore, the left side cover must be fixed with two chromium-plated screws (B813405).
3) As with the right side cover, the left side cover should also not protrude beyond the standard attachment plane (surface).
4) Do not cause short-circuits by pinching the wires.



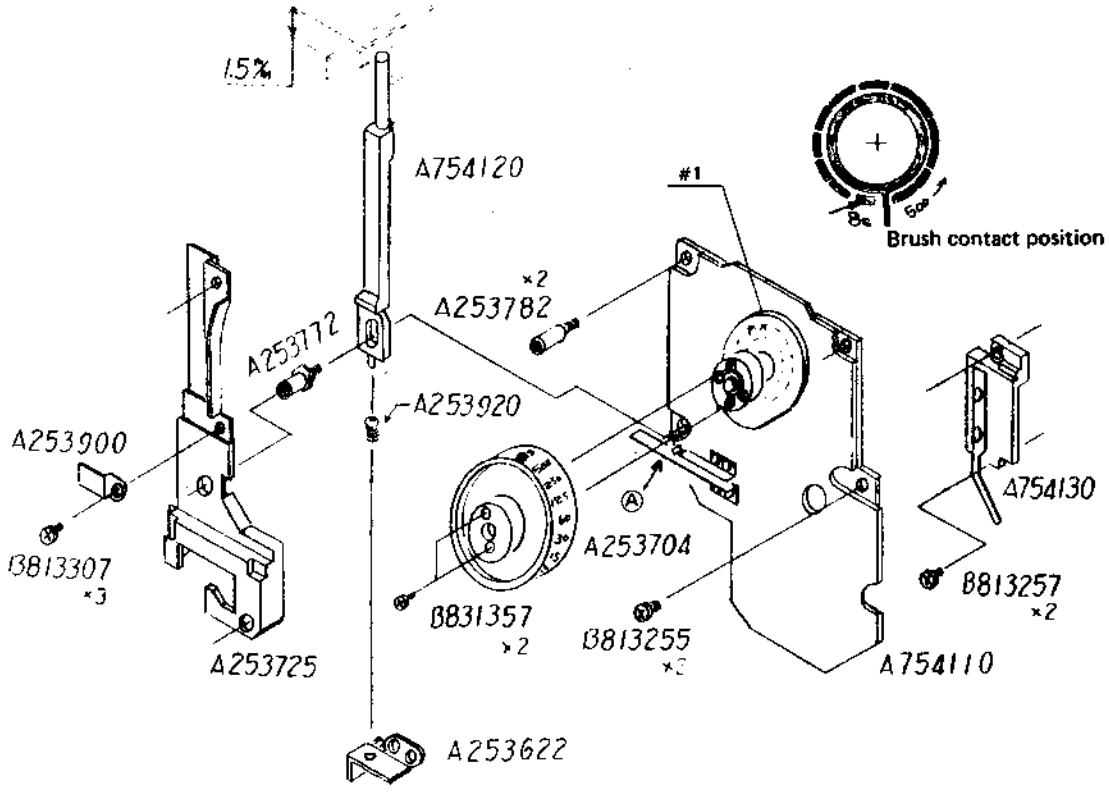
15. Shutter Speed Becomes 1/500 Second

The switch of the shutter circuit (A754100) is ON because the AE changeover rod (A754120) is pressed up by the strength of the AE changeover rod spring (A253920). However, when the AE Finder is attached, the AE changeover rod is pressed down and the switch is turned OFF, with the shutter circuit then becoming inoperational.

1) Is the AE changeover rod protruding 1.5 mm above the top frame?
   If not, rehook the spring (A253920) to adjust.
2) Is it possible that the switch of the shutter circuit is OFF?
   Confirm ON/OFF operations of the switch by pushing the tip of the AE changeover rod. If OFF, bend the contact plate (A) to make the necessary adjustment.
3) Check for defect in the wiring circuit. See page 26.

16. Relation of the Shutter Speed Dial and Shutter Speed Setting

1) Rotate the shutter dial click plate #1 and coincide its brush contact to the 8 second position (see drawing of pattern). Then, attach the shutter speed dial (A253704) with its 8 second setting at the top position.



17. Detachment of the Lens

Detachment of the lens differs with the cameras or, in other words, there are two systems, or 17-1 and 17-2 illustrated below. The two systems are easily differentiated by whether the lens release button has a leatherette covering or not.

17-1 Lens release button has leatherette covering.

Turn the film winding crank fully and charge the shutter. Rotate the lens release button locking ring (A254010) and depress the lens release button (A252293) while keeping the ring rotated. Finally, rotate the lens and detach.

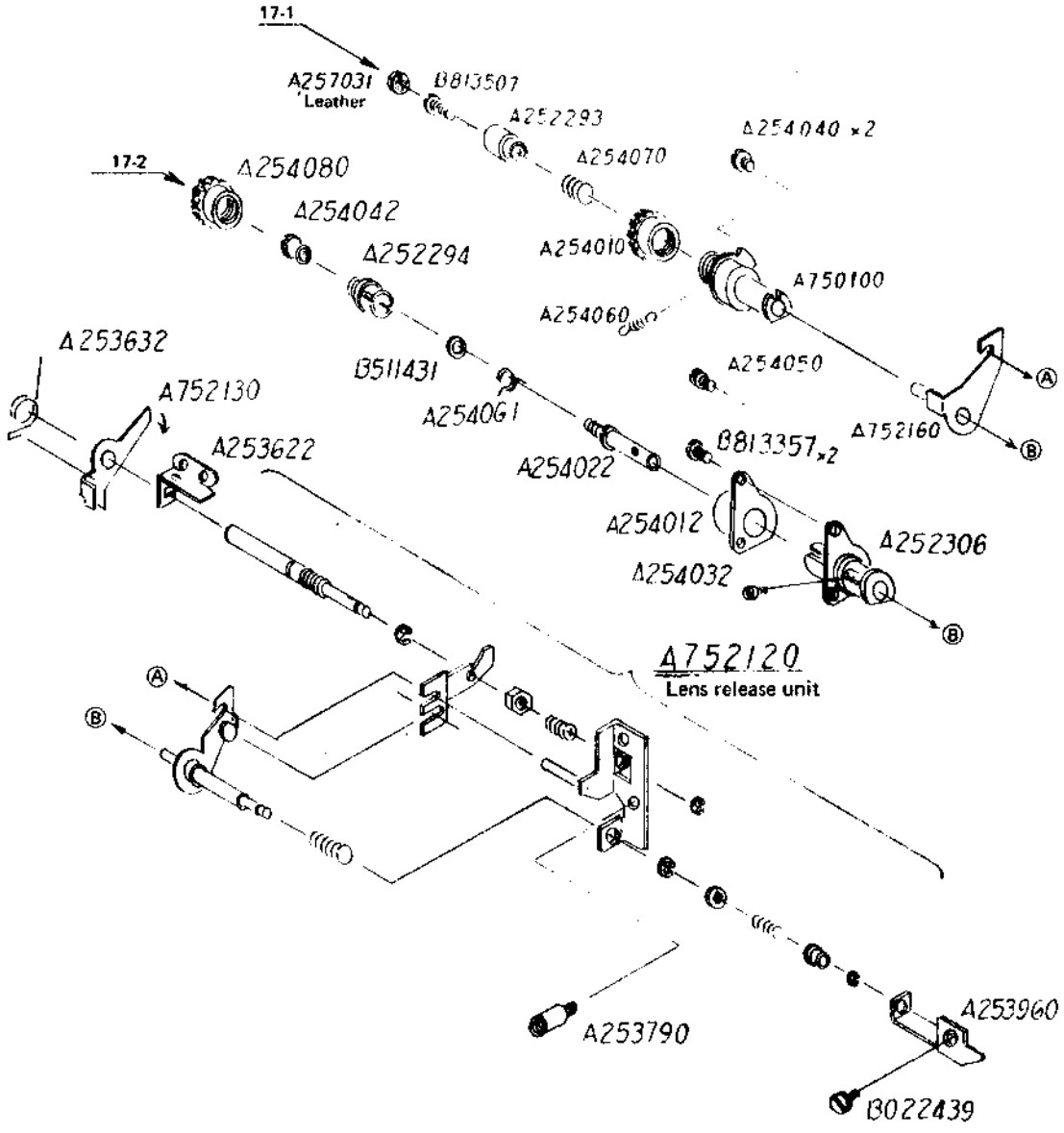
17-2 Lens release button is not covered.

Turn the film winding crank fully and charge the shutter. Rotate and depress the lens release button (A254080). Detach the lens.

CAUTION:

To repair defects in the 17-1 system, change completely to the new 17-2 system.

When the film winding and shutter charging operation is completed, the lens safety lock (A752130) is pushed by the S. operating ring unit (A752010), with the result that its hook section is then slipped off the lens button latch (#1), thus making it possible to depress the lens release button. When it is not possible to complete the film winding and shutter charging operation in the normal manner, push the lens safety lock with your finger which will make it possible to detach the lens.

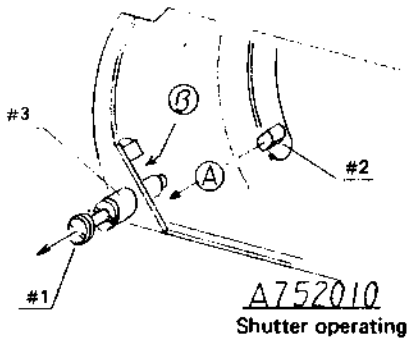


18. Lens cannot be Detached

When it is not possible to depress the lens release button, the trouble is due to deformation of the mirror set lever originating from rotation of the film winding crank when the #2 pin is not in the (B) section in the normal manner. The #2 pin will be located in (A) section, at such times.

In order to remove the lens, in this case detach the focusing screen and undertake the following operations from the top of the body.

1) Pull the setscrew (#1) in the arrow-indicated direction. Confirm that the #2 pin returns due to spring tension and enters (B) section.
2) Rotate the film winding crank fully, until it stops.
3) Then, remove the lens according to either 17-1 or 17-2, as explained on the previous page.
4) If the lens cannot be removed in the above case, use a screwdriver and push #3, while repeating the operations noted above.
5) If the mirror set lever is bent because of the above trouble, repair as explained on page 9. Or, if movement of the #1 pin is not proper, when checked, exchange the S. operating ring unit (A752010), as explained on page 11.



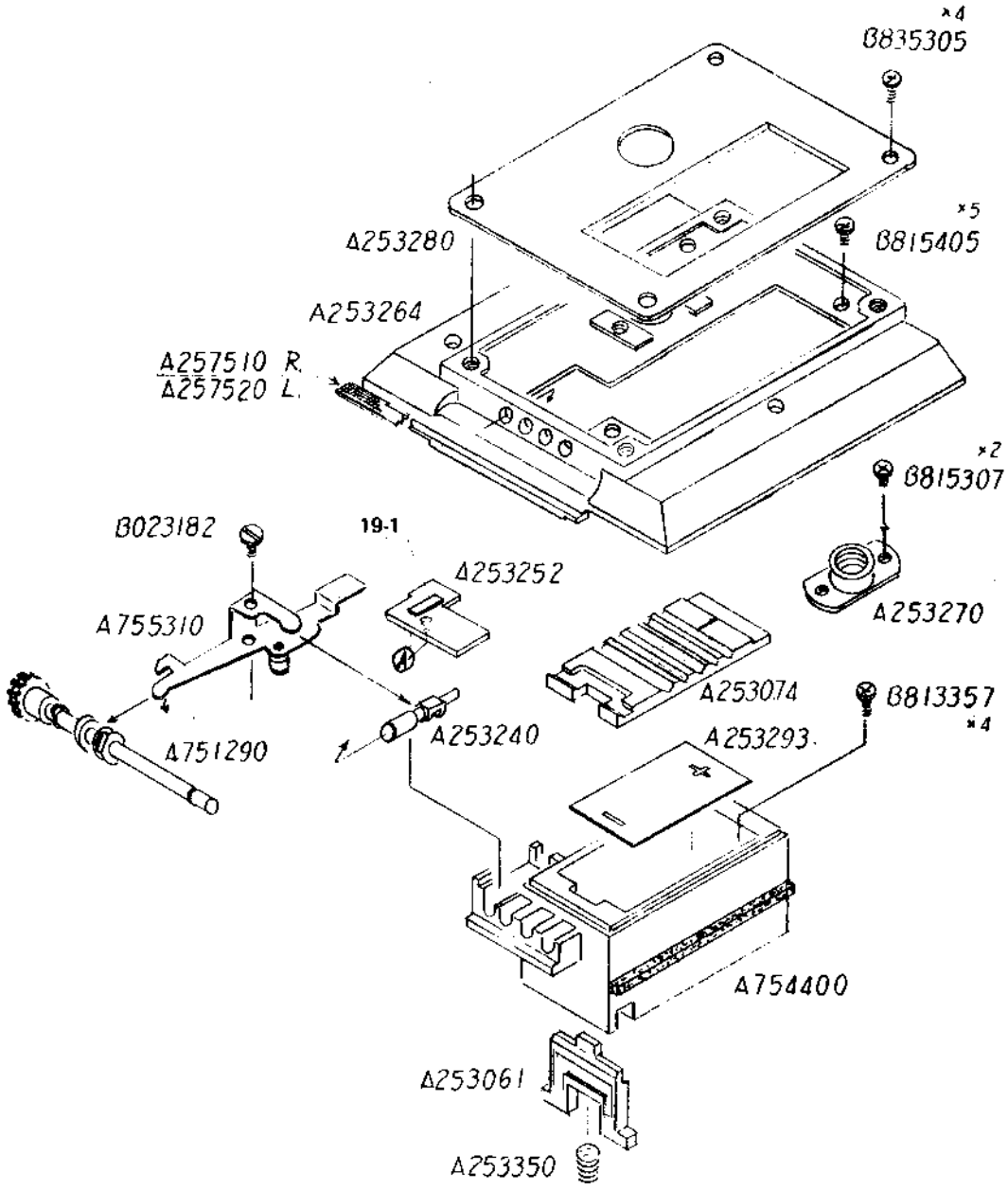
Shutter operating unit

19. Shutter Release Button does not Return

1) The speed-grip shutter release rod (A253240) is jammed in the hole on the bottom cover (A253264).
2) The release lever (A755310) is on top of the release rod (A751290) and disengaged.
3) The lower F. (film) release plate (A753550) is on top of the release safety lever (see page 8) and, therefore, disengaged.

Repair

1) Exchange the MD (motor drive) connector cover (A253252) for a new part in which a protrusion has been added at the section indicated as (A) in the drawing. When making the exchange, however, attach liners with bonding agent, eliminate looseness in the speed-grip shutter release rod and, at the same time, align the rod properly to the hole on the bottom cover.
2) Bend the tip of the release lever downwards so that it does not become detached from the grooved section in the release rod.
3) Turn the tip of the release safety lever (see page 8) upwards.



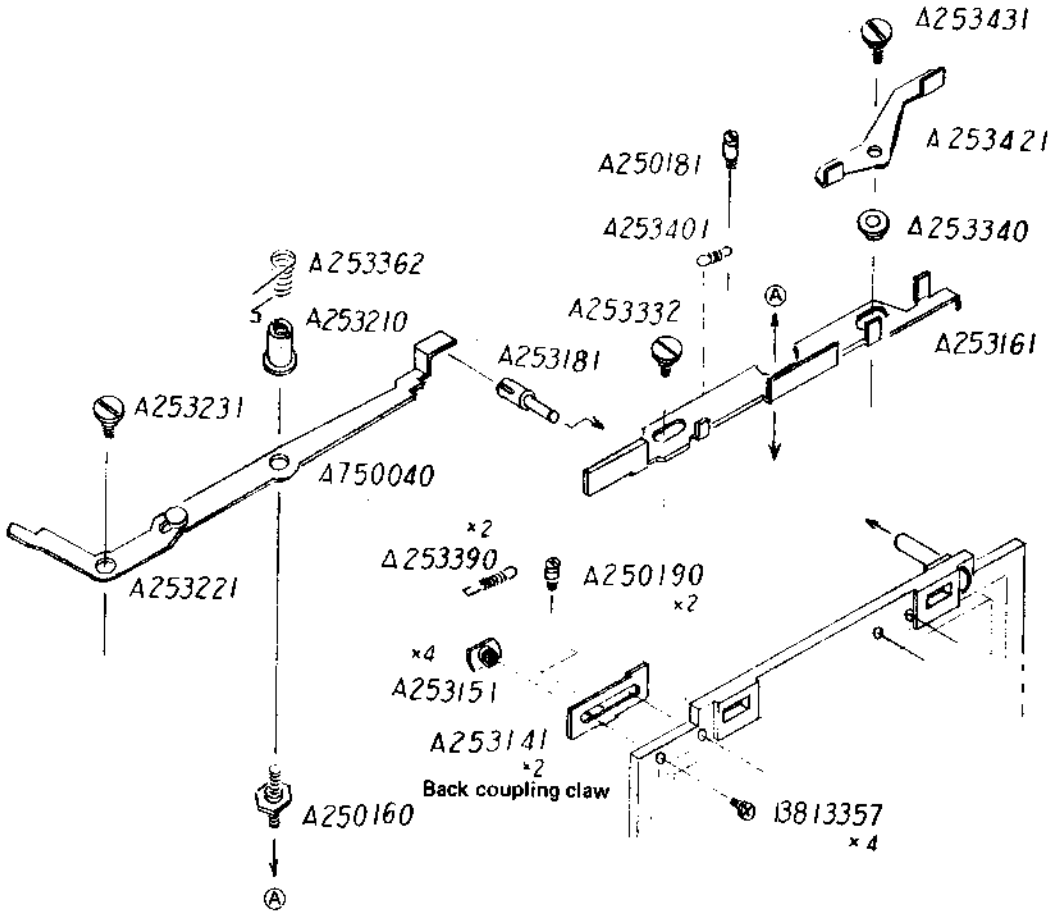
20. Film Back cannot be Connected: Back Coupling Claw is Bent

Back coupling claw (A253141) does not slide laterally and, therefore, becomes bent when pressed by the back coupling link on the film back side.

1) Exchange the back coupling claw the coupling claw guide (A253151). Apply Loc-Tite to the B813357 screw and fix securely.

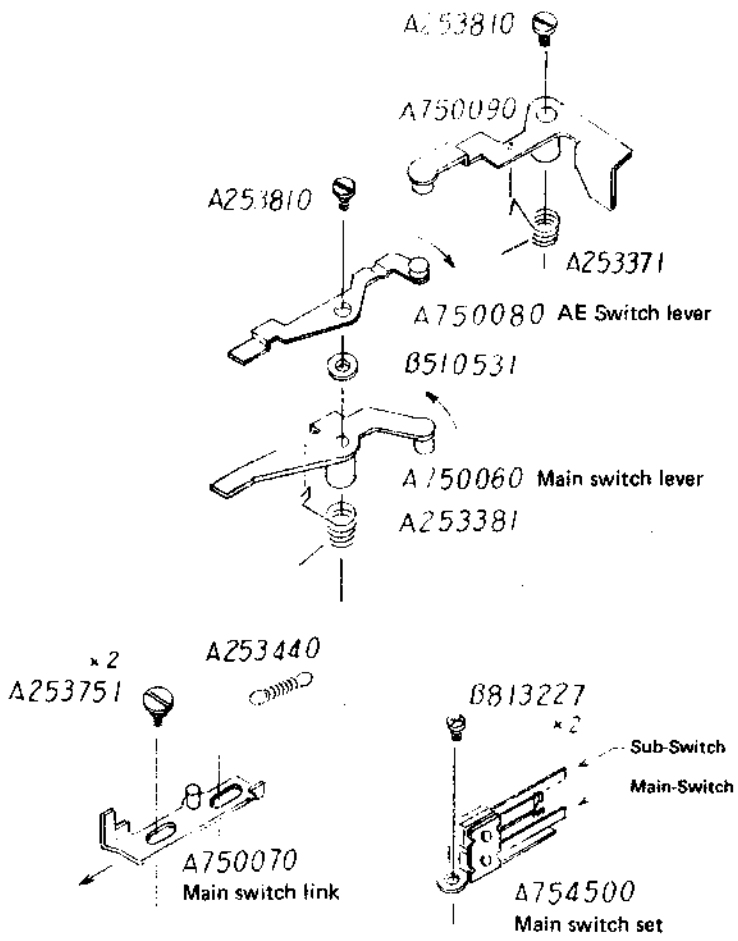
CAUTION:

When the dark slide is inserted fully into the film back, the dark slide connecting pin (A253181) is pressed by the dark slide, which results in the dark slide safety latch (A253221) pushing the lower F. release plate (A753550) and preventing depression of the shutter release button.



21. Action of the Main Switch Set

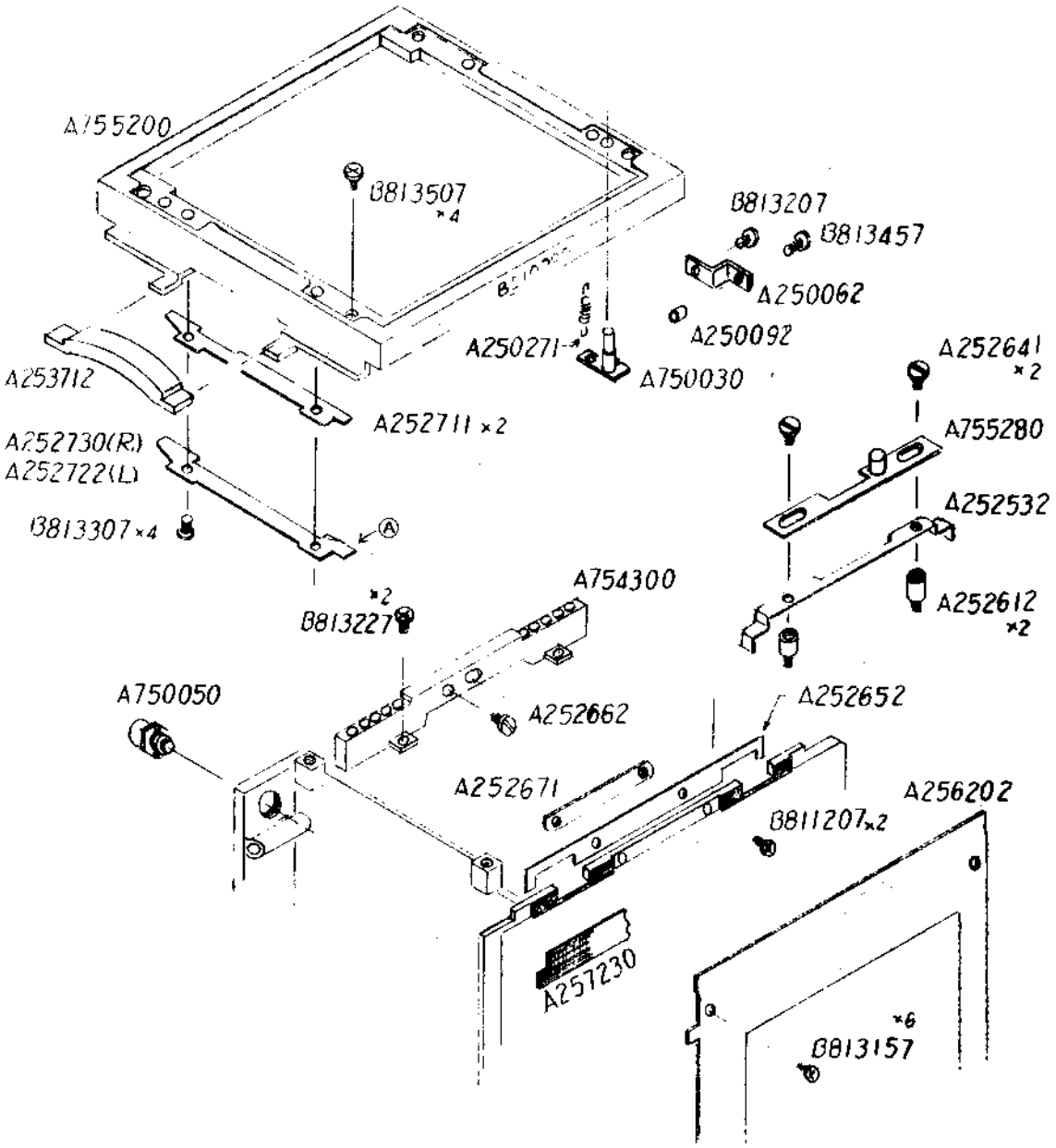
1) When the film winding and shutter charging operation is completed, the main switch link (A750070) is pushed in the arrow-indicated direction while the main switch lever (A750060) is also moved in its arrow-indicated direction, by the action of the S. operating ring (A752010), as noted on page 11. This results in the main switch becoming ON (the sub-switch remains OFF).
2) When the shutter release button is depressed, the AE switch lever (A750080) is pushed in the arrow-indicated direction, through the medium of the release lever (A755310), as noted on page 16, which results in the sub-switch becoming ON. At the same time, the main switch lever is returned to its original position, with the result that the main switch becomes OFF.
3) Locate the main switch set (A754500) or bend the contact plates so that the above-mentioned actions are completed in about one-half of the stroke between the time of depressing the shutter release button and the start of the reflex mirror action. (Testing tool A754500-PT)



22. Waist-Level Finder cannot be Attached: Mount Springs are Bent

1) The finder cannot be attached because the finder mount spring (A252722) is deformed at point A.
   Loosen the left and right side covers, detach the top frame (A755200) and exchange the finder mount springs.

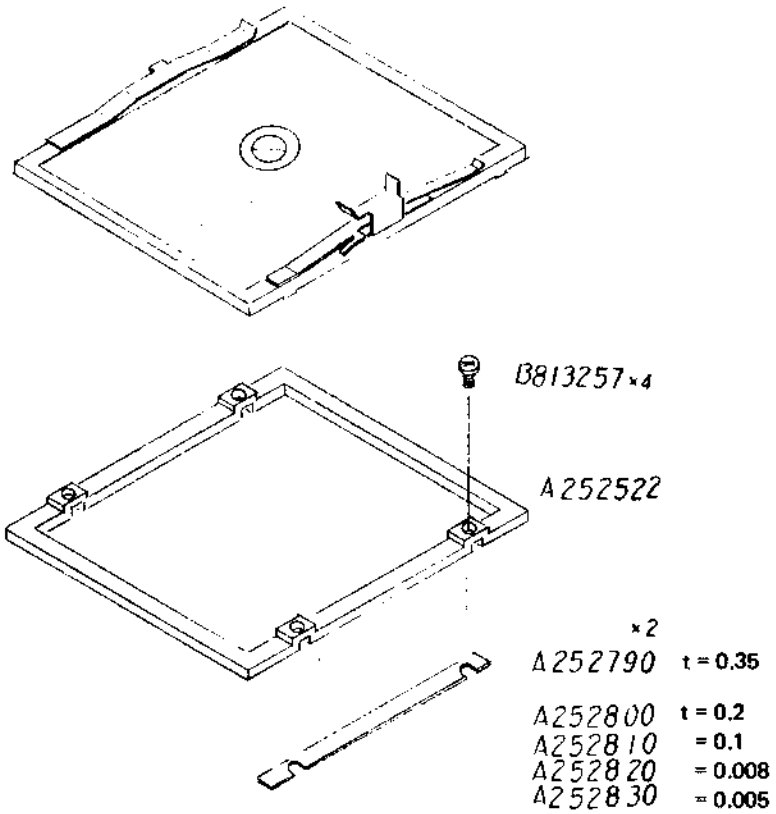
CAUTION:
The part of the top frame with numbers engraved on it should not protrude above the standard attachment plane (surface).
Align the finder lock pin (A750030), AE changeover rod (A754120) and hole.



23. Adjusting the Focus of the Focusing Screen

1) Coincide the reflex mirror to the 45° position (see page 23).
2) Adjust the height of the frame gate by increasing or decreasing the adjusting liners inserted below the frame
3) Loosen four screws and adjust the height of the frame gate (A252522) by increasing or decreasing the number of adjusting liners inserted under the frame gate.

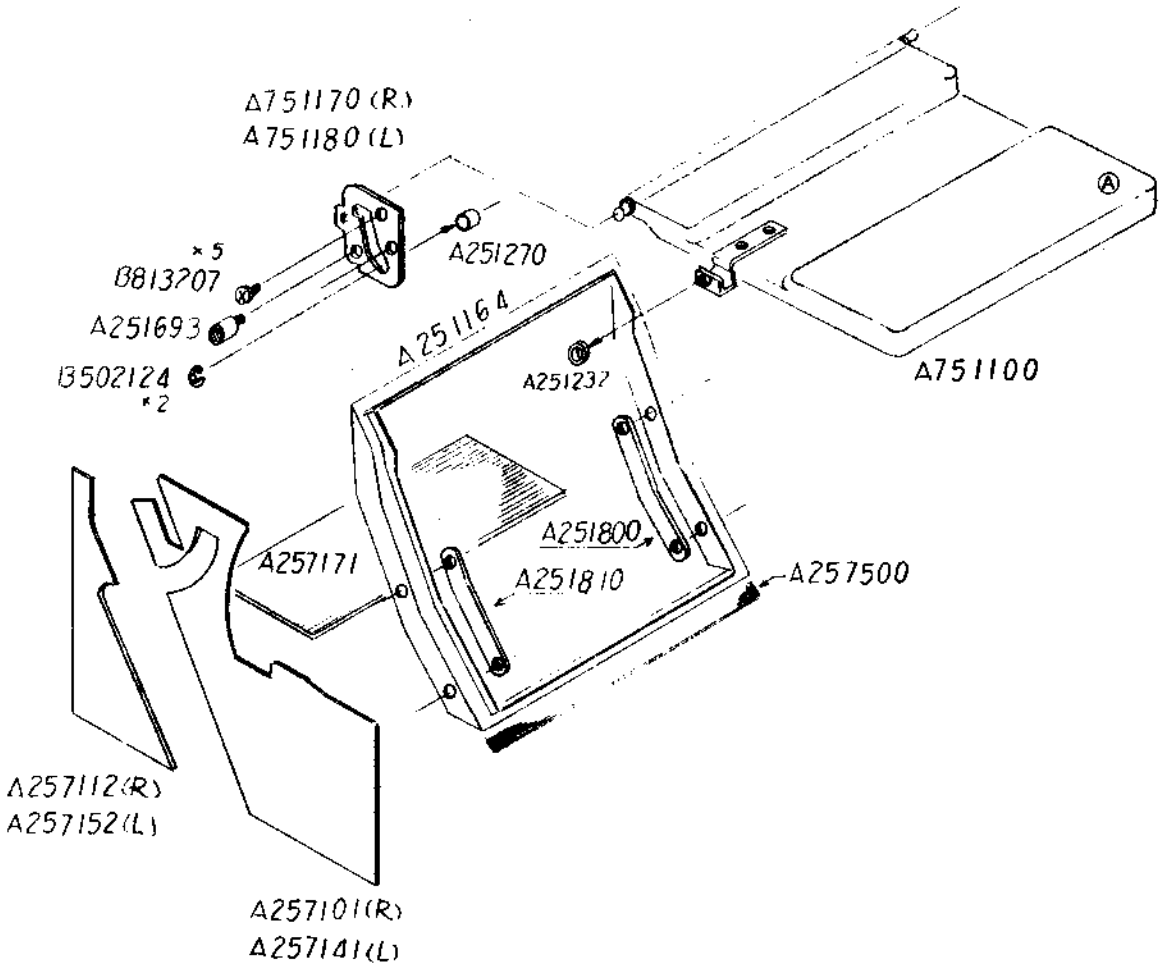
CAUTION:
The 45° position of the reflex mirror and the adjusting liners inserted under the frame gate have already been precisely adjusted in the factory and, therefore, should not require adjustments. Confirm that they are really out of alignment before making the above adjustments.



24. Reflex Mirror Light-Tight Plate

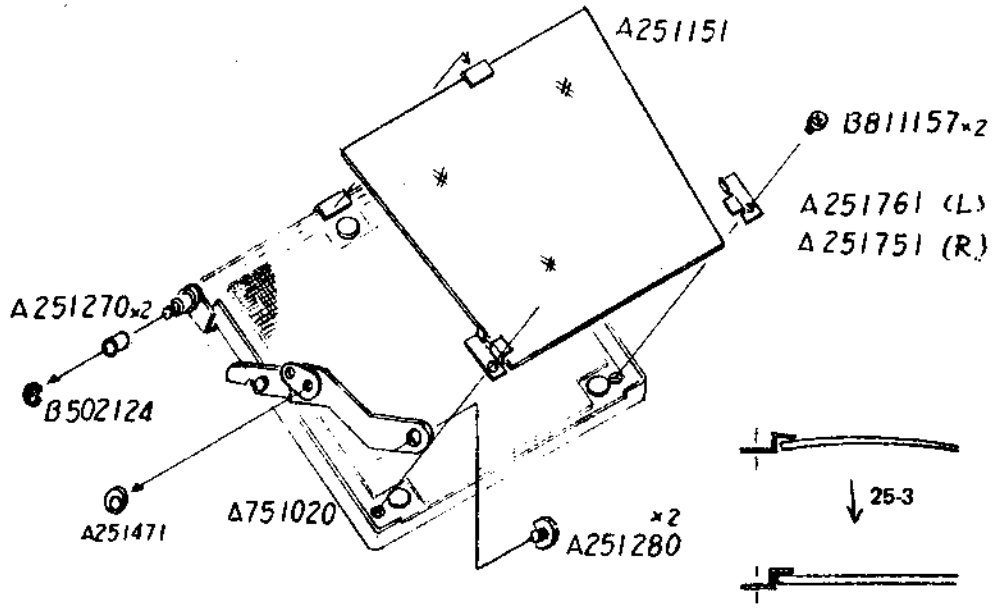
Light to the film plane is shut out by the rear light-tight frame (A251164) and the light-tight plate (A751100).

1) If the leading end of section (A) on the light-tight plate is not contacting the mirror frame, when the light-tight plate is in the up position, then exchange the spring (A251821, see page 10).



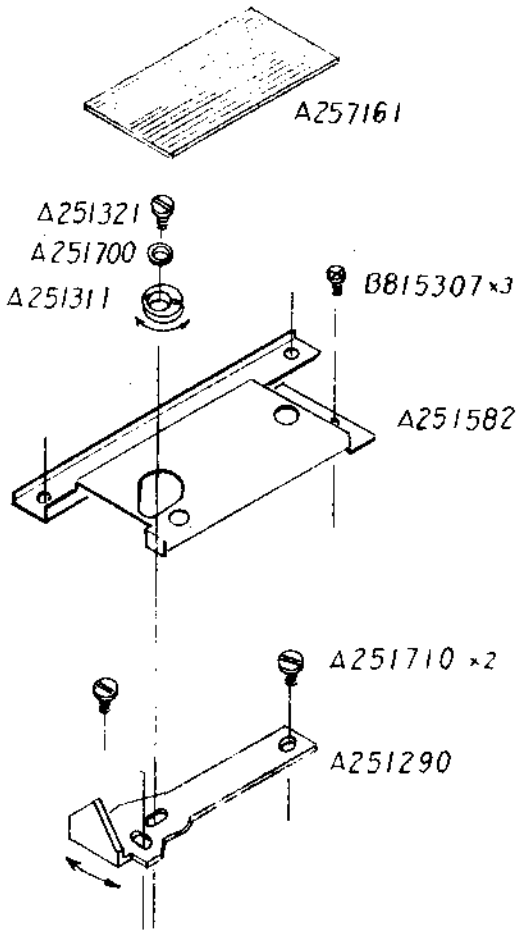
25. Exchange of the Reflex Mirror

1) Loosen two B811157 screws of the mirror holders (A251751 and A251761) and detach the mirror. (Support the mirror frame by its rear surface in order to prevent warping.)
2) Place the mirror holders against the side surfaces of the mirror and tighten the screws so that lateral looseness or movement in the mirror is completely eliminated. When tightening the screws, however, support the mirror frame (A751020) by its rear surface, with your free hand, in order to prevent warping.
3) The bent sections of the mirror holders may also be adjusted, i.e., bent more or bent less, as illustrated, to prevent warping of the mirror. (Since there will be differences in the focus and the sharpness of the finder image, depending on how much the screw is tightened or loosened, both these points should be confirmed before making it final.)



26. Adjustment of the Mirror Frame to 45°

1) The stopping location of the mirror frame can be changed variably, by rotating the mirror adjusting collar (A251311) which will have the effect of moving the mirror stopper (A251290).
   The mirror stopper screws (A251710 x 2) should be tightened when the mirror is properly located at the 45° position. (Do not loosen the mirror adjusting axle A251321.)
2) Since the camera is already precisely adjusted, the screws should not be tightened or loosened without good reasons.

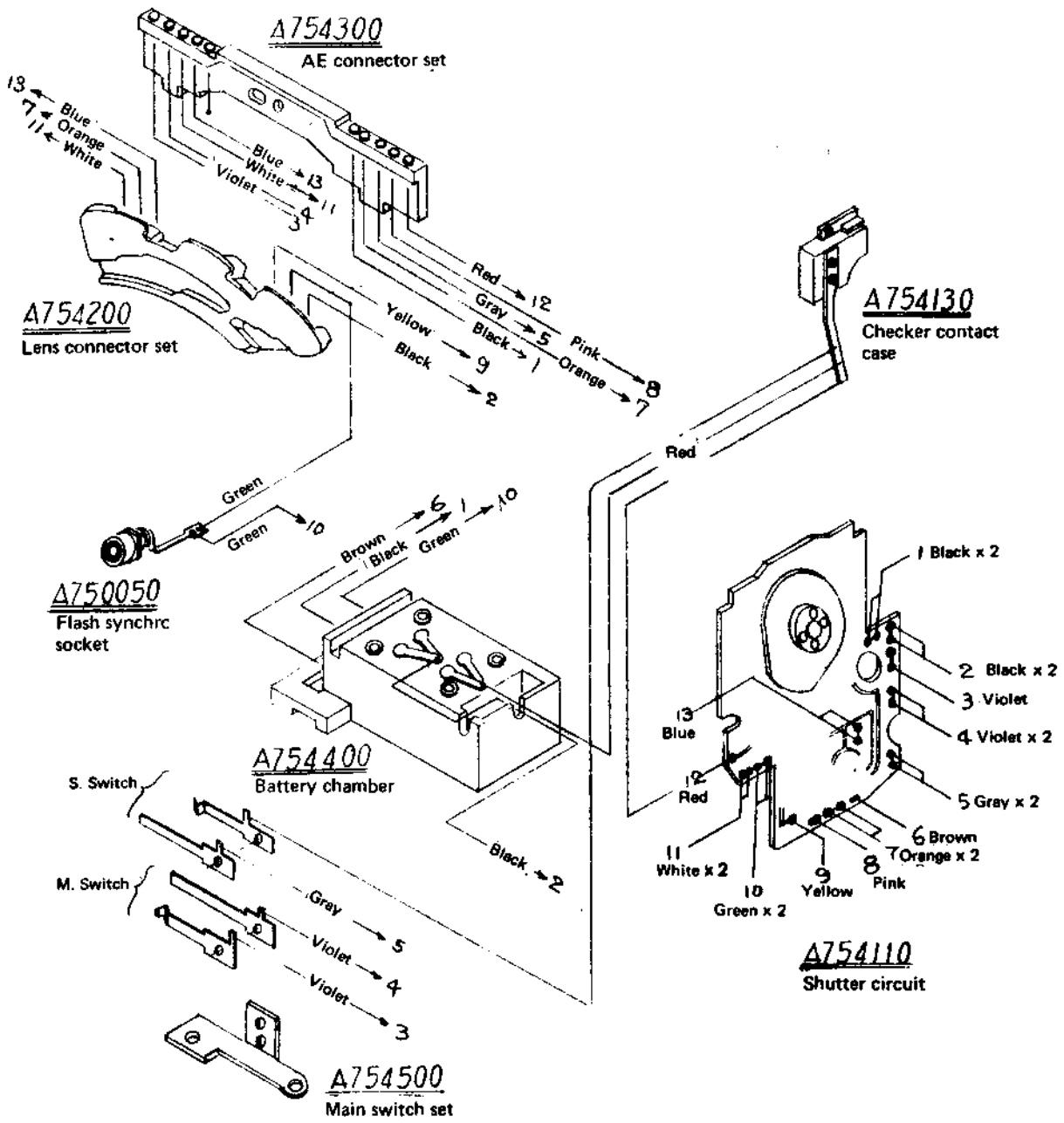


27. Wiring Diagram (I)

When three red-colored lead wires are connected to the checker contact case (A754130), the numbered wires should be connected to same numbers in the shutter circuit.

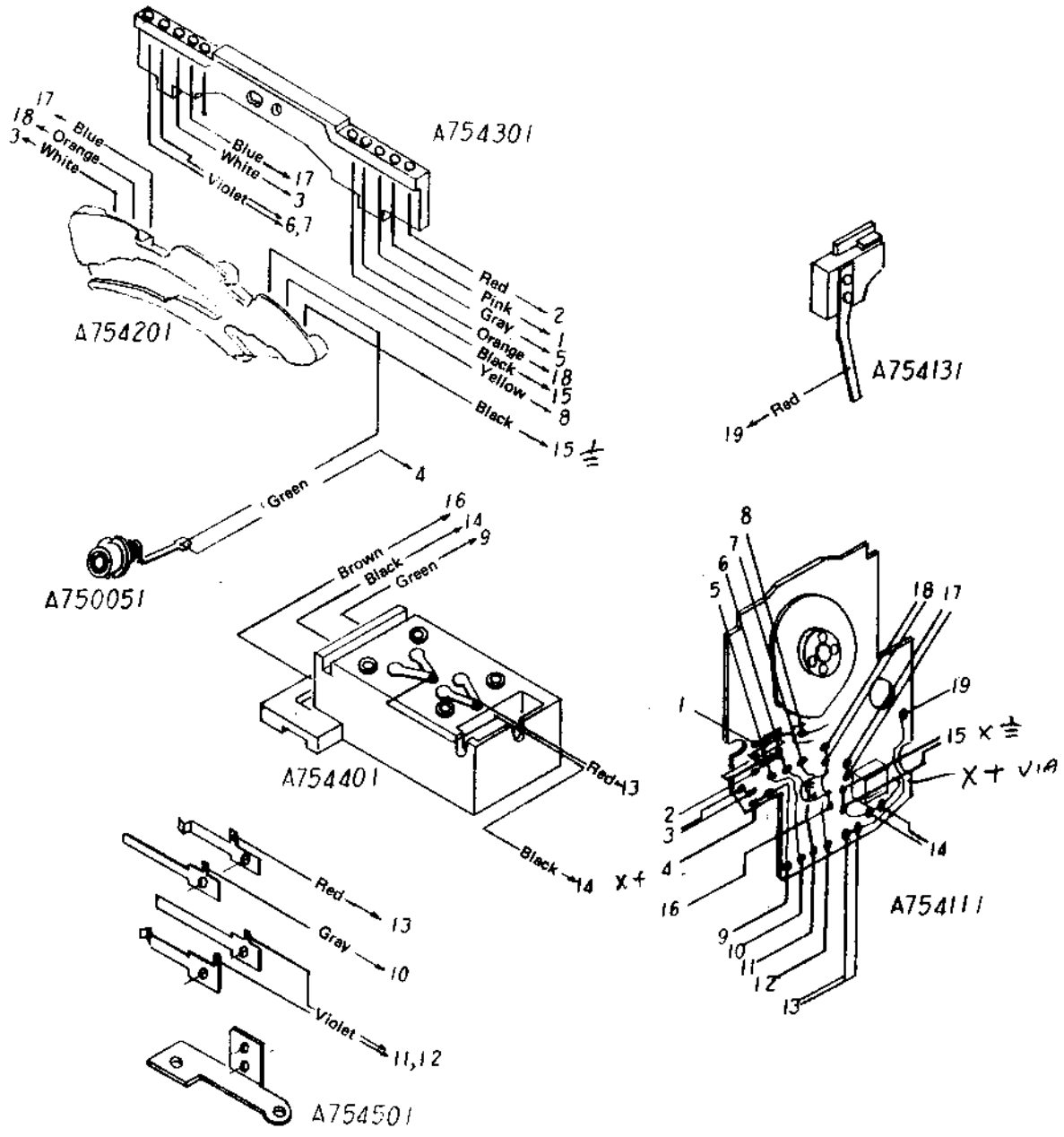
Red	Power system
Green	Flash synchro system
Black	Grounding of body
Blue	Grounding of circuit
Yellow	Integrating system
Brown	Motor drive power system
Gray	AE finder
White	Aperture ring resistances
Orange	Magnet (Mg) output
Violet	Memory circuit
Pink	AE finder power system

When the AE Finder is attached.



28. Wiring Diagram (II)

When one red-colored lead wire is connected to the checker contact case (A754131), the numbered wires should be connected to same numbers in the shutter circuit (A754111).

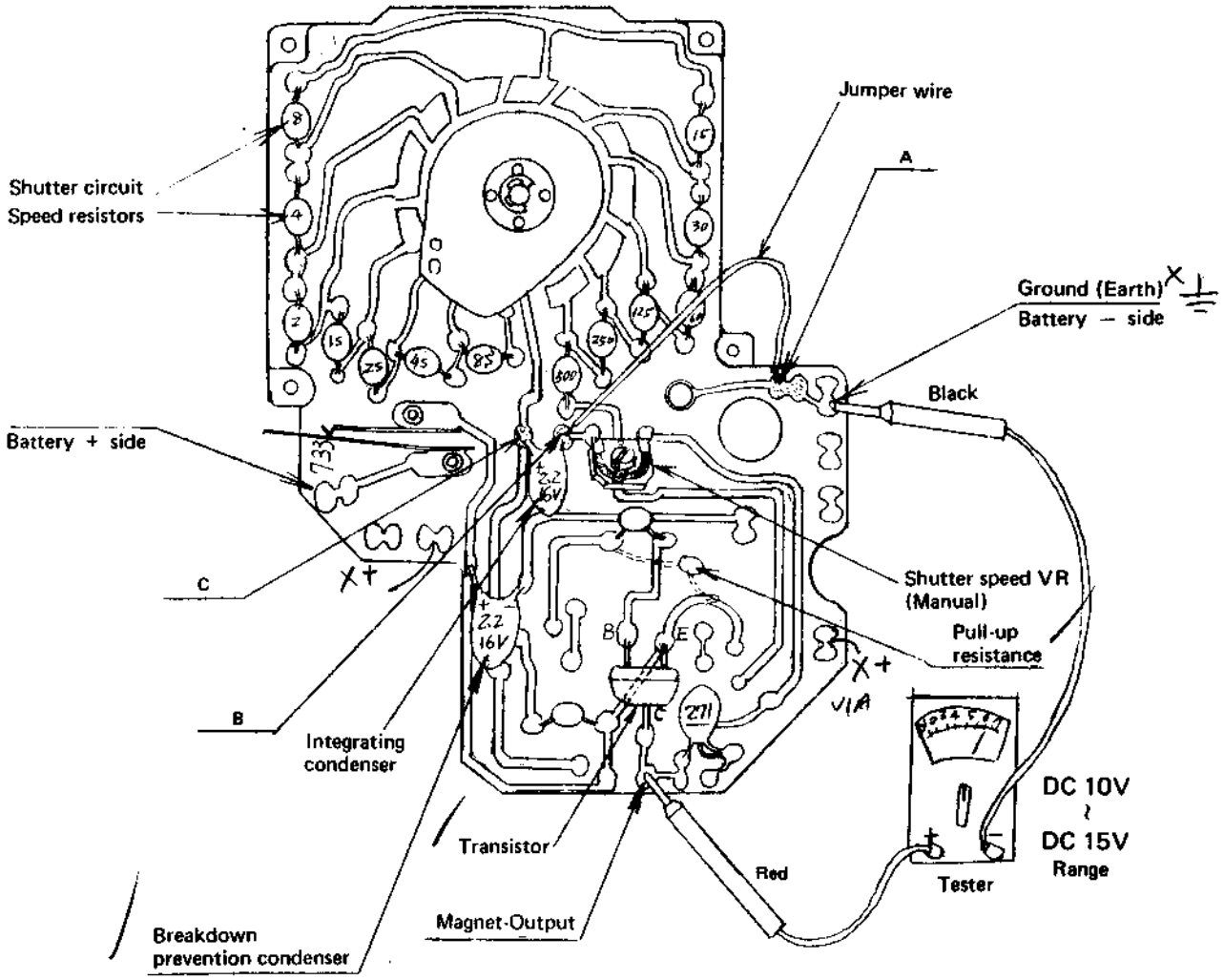


ETR Electronic Control Circuit Repair Manual

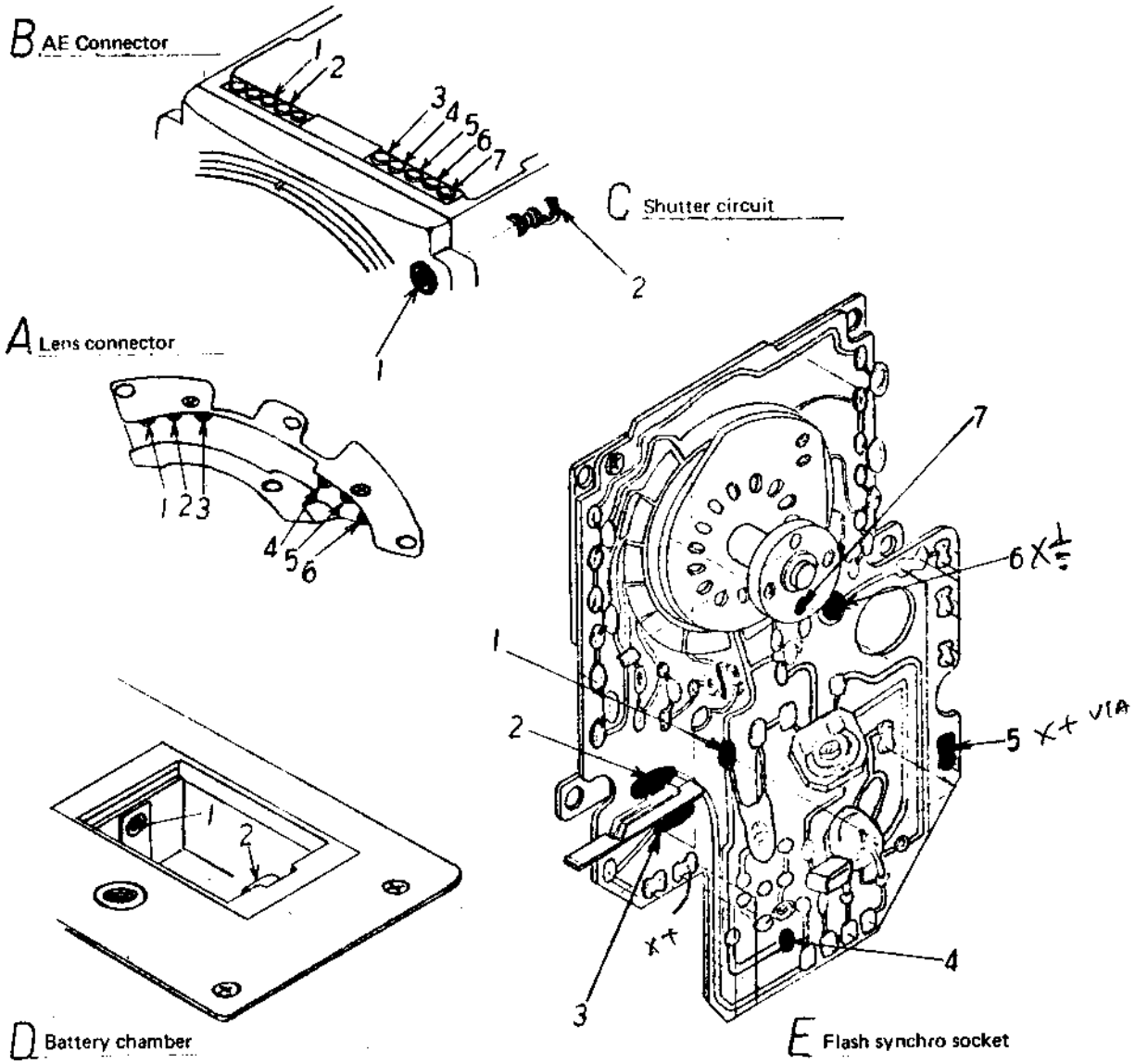
1. When the electronic control circuit is defective, it is possible to consider the following troubles:—
   a) Shutter stays open,
   b) Shutter operates at 1/500 sec. at all shutter speed setting and
   c) Shutter stays open or operates at 1/500 sec. on some of the shutter speed settings only.
2. If the shutter speed settings are not accurate, they can be adjusted with the "shutter speed VR (variable resistor)" in the illustration but a "shutter speed tester" will be required for this purpose.
   Approximate adjustments are, however, possible in the slow shutter speed settings of 1S, 2S and 4S, without such equipment.
3. First, use a tester and check whether the electronic control circuit is working normally or not. If the tester indicates normal operation, there is no reason for exchanging the electronic circuit 733.
4. The actual checking procedure of the electronic control circuit, in the above case, is as follows:—
   1) Take off the left side cover and remove the lens from the lens mount.
   2) Connect point A with point B, with a jumper wire, as shown in Fig. 1.
   3) Insert the battery into the battery chamber without mistaking the polarity.
   4) Set the range of the tester for DC 10V to DC 15V. (Voltage used is 0 to 6V.)
   5) Place the red lead on the Mg (magnet output) terminal and the black lead on the ground (earth) terminal, as shown in Fig. 1.
   6) Without making any change in the above conditions for 5), use a pincer and short-circuit point C and point B.
   7) Without making any change in the above conditions for 5, now remove the pincer away from the points.
5. The reading on the tester for 5), in the checking procedures above, should be within the range 5V to 6.3V. When the pincer is taken away in 7), in the above procedures, check whether the reading on the tester becomes 0 after an elapse of time equal to that of the shutter speed setting set to the shutter speed dial. Or, in other words, the actual shutter speed will coreespond to the time it takes for the tester reading to change from 6V to 0, when the C-B short-circuit in 6) is terminated in 7).
   It can be seen, from the foregoing, that this test is possible only when slow shutter speeds from 1S to 4S are set to the shutter speed dial.
6. If the time-elapse can be confirmed in 5 above, then the 733 electronic circuit can be considered as operating normally.
7. In Fig. 1, the top group of resistors from 8S to 500 are the fixed resistors which determine the shutter speed setting. Thus, for example, if the resistor 30, in this group, is detached from the circuit board due to defective soldering, etc. the shutter speeds 1/500 sec. to 1/60 sec. will operate normally but the shutter will stay open at the other settings from 1/30 sec. to 8S. In other words, the shutter speeds on the slow side of the resistor detached from the circuit board will all stay open. Thus, for example, should the resistor 500 be in the OPEN condition, the shutter will stay open on all shutter speed settings.
8. If the 733 electronic circuit is operating normally, it is also possible to consider troubles due to mistaken wire connections, short-circuiting between wires and breakages in the wire and these troubles should be checked according to the following "Attached Sheet" which is also the general procedures followed on the Zenza Bronica assembly line. A to D
9. If the tester reading for 5 shows an incorrect shutter speed setting and the checking procedures in 4, 5, 6 and 7 indicate that the circuit board is defective, exchange the circuit board.
   If the circuit is then found to be operating normally (with the new circuit board), then check the wiring circuit as noted in 8.
10. The wiring diagram shown in Fig. 1 may or may not have the "breakdown prevention condenser" or the "pull-up resistor", which are additional parts which have been added for preventing the following specific troubles.
    a) Breakdown prevention condenser:
       The shutter remains open at all shutter speeds or at the slow 1S to 8S speeds when the shutter is released with the electronic flash unit connected to the camera but returns to normal operation upon detaching the electronic flash unit.
       * The breakdown prevention condenser is not supplied for repair purposes but the circuit board can be exchanged completely. Defects run about one per thousand.
    b) Pull-up resistance 8.2 kilo ohms:
       Voltage is about 6.3V when the battery is still new. The shutter remains open while the battery voltage is high but returns to normal operations when the voltage falls to 5V.
       * The pull-up resistor is also not supplied for repair purposes but the circuit board can be exchanged completely. Defects run about one per 150.

CAUTION:
If the shutter remains open even when the electronic flash unit is disconnected and/or when the battery voltage falls to 5V, the origin of the defect cannot be considered as being the same as for the above two defects. Therefore, the circuit should be checked as per 4 to 8 for other reasons.

11. When checking the wiring circuit according to page 28, the reading should be less than 0.1 ohm. However, this cannot be measured and, therefore, simply check for continuity or whether the scale reading is almost 0 or not.



Electronic Control Circuit Fig. 1



Checking Continuity and Insulation in the Wiring.

Step 1 – Use a digital multi-tester that can measure up to 0.1 ohm.
Step 2 – Test in the following sequence.

Sequence	Test Point (1)	Test Point (2)	Checking Points
1	A-1	B-1	Continuity less than 1 ohm.
2	A-2	B-4	– ditto –
3	A-3	B-2	– ditto –
4	A-4	E-4	– ditto –
5	A-5	C-2	– ditto –
6	A-6	B-3	– ditto –
7	A-6	C-1	Must be insulated.
8	A-6	E-6	Continuity less than 1 ohm.
9	B-5	E-5	– ditto –
10	B-6	E-3	– ditto –
11	B-7	E-2	– ditto –
12	D-1	D-2	Must be insulated
13	D-1	E-2, E-3	Continuity less than 1 ohm.
14	D-2	E-6	– ditto –

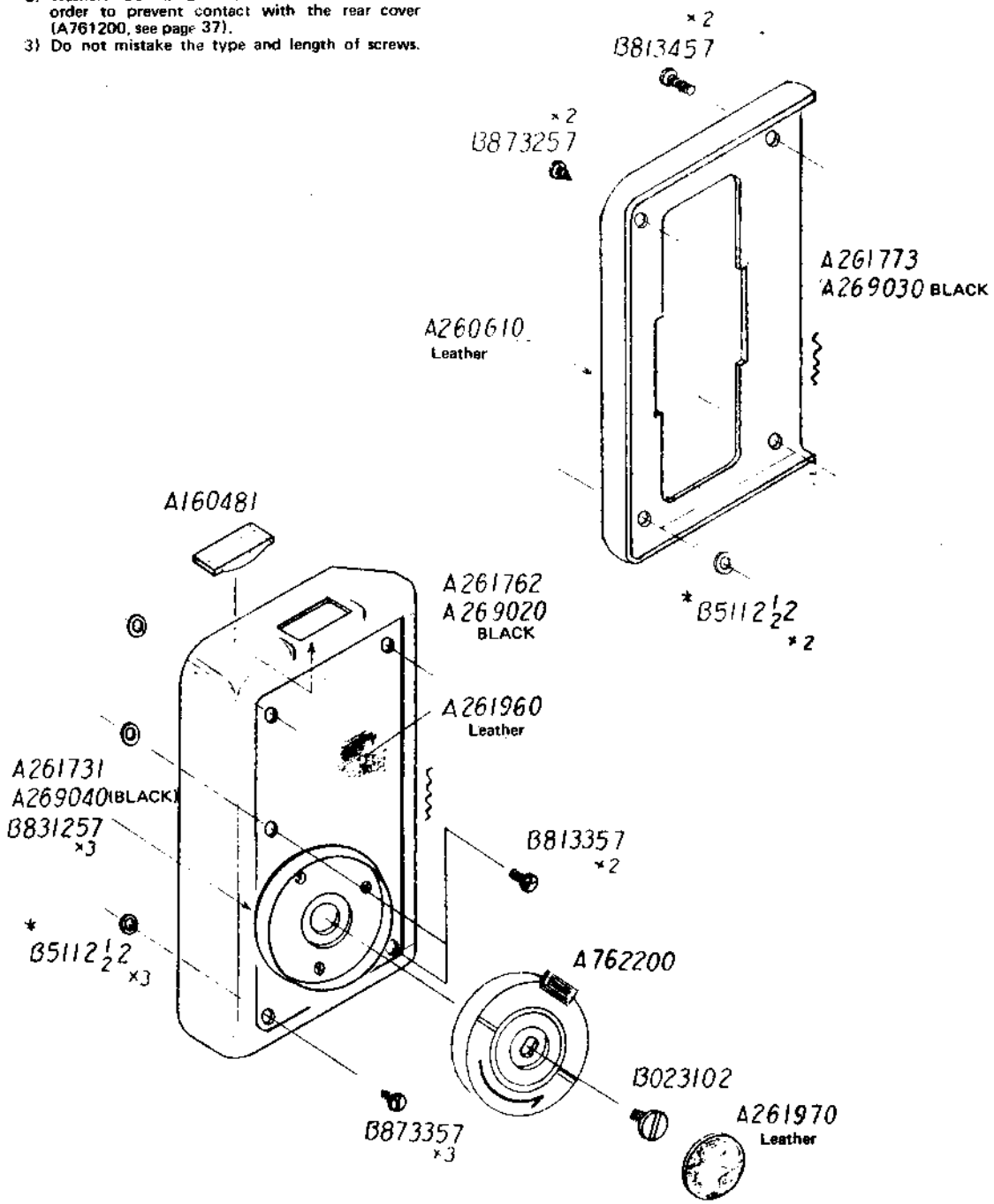
Continuity in all instances is less than 1 ohm. If more than 1 ohm, check very carefully for poor soldering connection or for a break in the wire.

1. Detachment of the Left and Right Magazine Side Covers

1) Strip off the film winder leatherette (A261970), loosen the right hand screw (B023102) and detach the manual film winder (A762200).
2) Strip off the right cover leatherette (A261960) sufficiently to expose the screws, then loosen two B813357 screws and three B873357 screws and, finally, detach the M. (magazine) right side cover. The M. left side cover (A261773) should also be detached in similar manner.

Pointers on Attachment

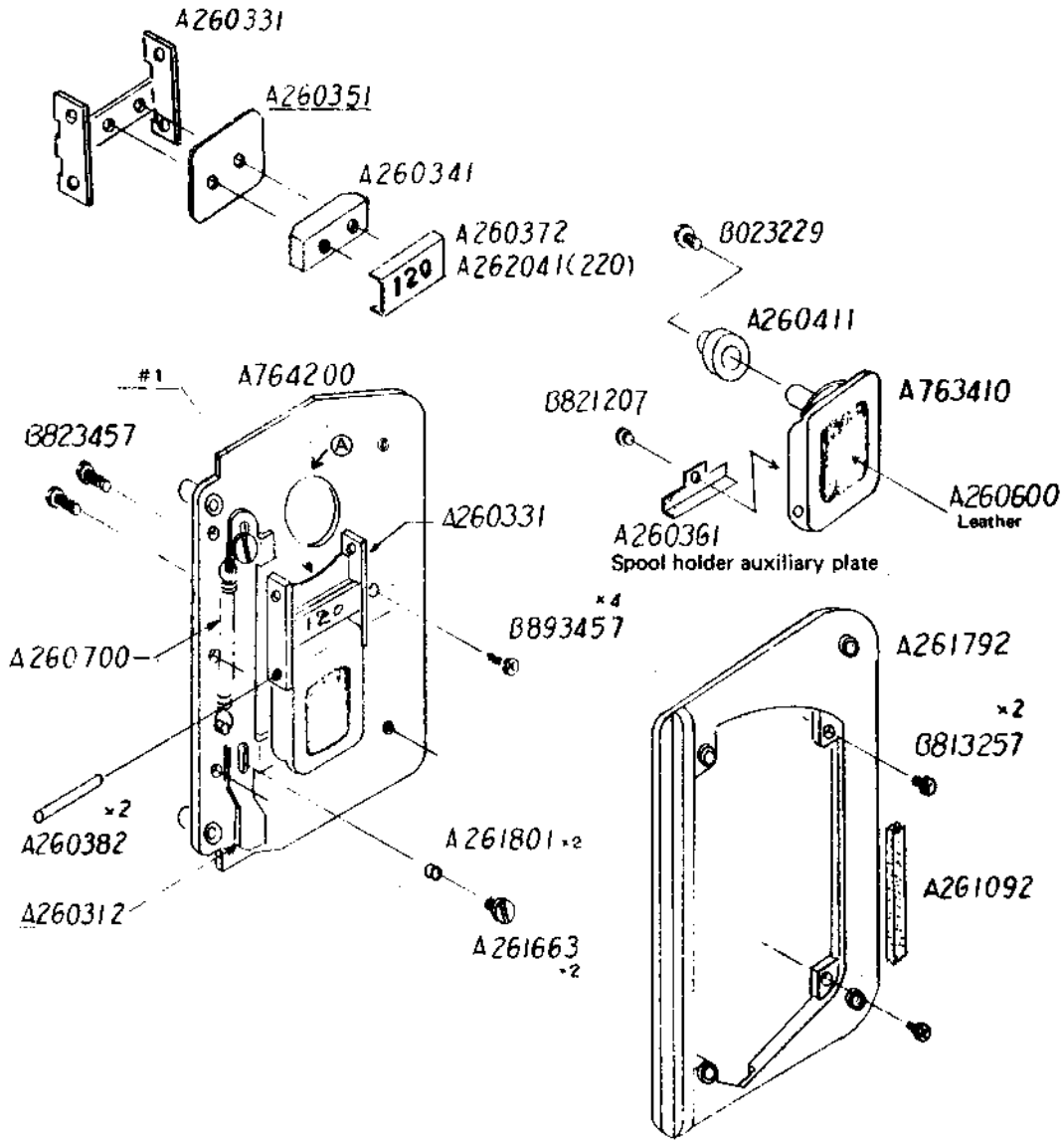
1) In order that the section indicated by the wavy line ~~~~~ does not protrude, locate the left and right M. side covers while attached to the film gate (see page 36).
2) Washers B511202 may have to inserted in order to prevent contact with the rear cover (A761200, see page 37).
3) Do not mistake the type and length of screws.



2. Spool Holder does not Close: Spool Holder Auxiliary Plate is Detached

Exchange the M. left side plate set (A764200).

1) Detach the M. left side cover.
2) Loosen two B813257 screws and detach the left light-tight plate (A261792).
3) Loosen four B893457 screws and take out the M. left side plate set.
   In the new M. left side plate set, the spool holder spring (A260351) is already riveted to the M. left side plate (#1) and, therefore, does not require bonding of the spool holder auxiliary plate (A260361) to the spool holder (A763410).
   Loosen two B823457 screws and locate the spool holder base (A260331) so that the spool holder does not hit (A) section on the M. left side plate during its opening/closing actions.
4) Change and attach the film plate indicator plate (A260372) to match the film insert.



3. Counter Dial does not Advance

Exchange in the following manner, when the pin (#1) of the counter roller shaft A (A764410) is broken.

1) Confirm broken pin by detaching the M. right side cover (see page 29).
2) Loosen the four B062066 setscrews of the frame counter roller A (A764400).
3) Loosen four B893457 screws and detach the right light-tight cover (A763830).
4) Take out and exchange the counter roller shaft A.

Pointers on Assembling the Counter Roller Shaft A

1) Tighten four B062066 setscrews at the height required for properly engaging the pin (#1) and gear (#2) of the counter lever (A763210).

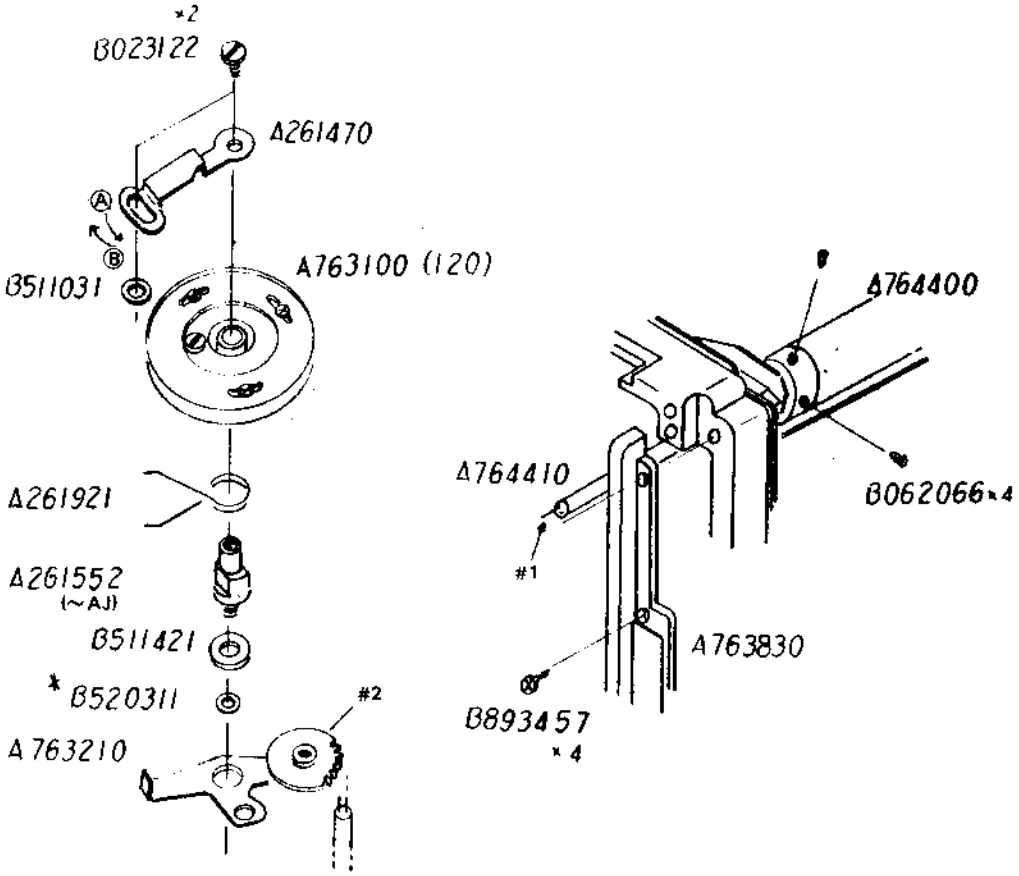
4. Adjusting Film Start

Distance from start-mark to the first frame:—

120 roll film	205 to 235 mm
220 roll film	215 to 255 mm

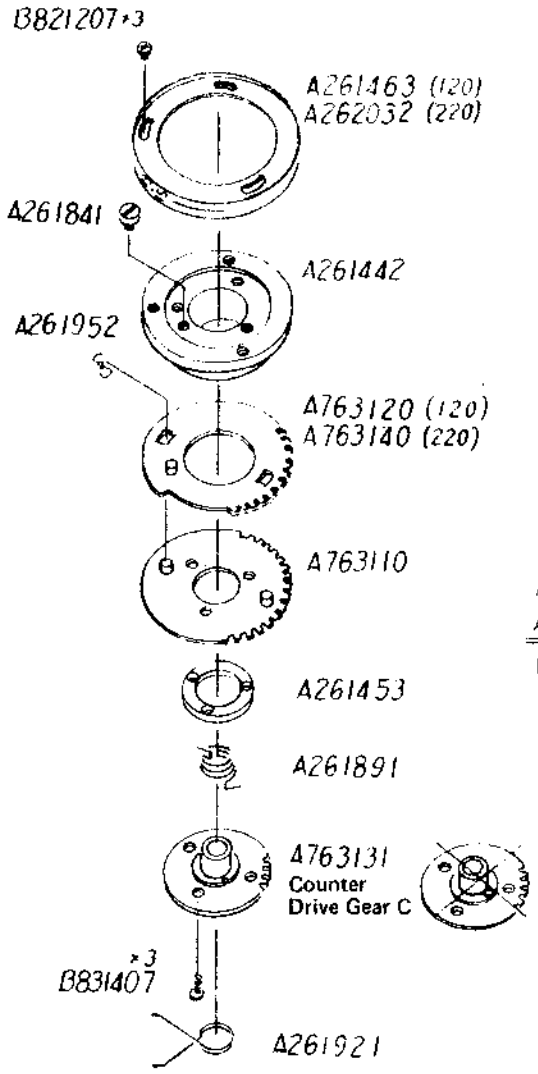
Adjusting the location of the counter dial stopper (A261470)

Movement in A direction — Delays appearance of the first frame.
Movement in B direction — Speeds up appearance of the first frame.



5. Counter Dial does not Return

1) If the counter dial returns when the M. (magazine) right side cover (see page 29) is detached, then attach washers (B511212/B511222) with bonding agent, as explained in "1. Detachment of the Left and Right M. Side Covers" on page 31.
2) Check rotation of the gears on the counter lever (A763210) and, if not smooth, exchange. (See page 33.)
3) Check whether there is dirt or other foreign particles caught in the gear teeth and, if so, clean.
4) Reverse the counter dial (A261463) slightly with a pincer, from its stopping position. If the counter dial spring (A261891) should move, with the operation, the counter lever spring (A261921) is in contact with the counter dial and, therefore, the dividing plate set (A763100) should be exchanged. Exchange the dividing plate set for one in which the hooking point of the counter drive gear C (A763131) is a groove instead of the previous hole. When making the exchange, adjust the position of the wind stopper pawl (A261391), as explained on page 35.



6. Winding Action does not Stop

The film back signals the body when to stop the winding action by protruding the F. (film) release pin (A260990) 4 to 4.3 mm above the standard attachment plane (surface) (height of the F. release cylinder A is 4 mm). Therefore, detach the film back from the body and check height of the F. release pin.

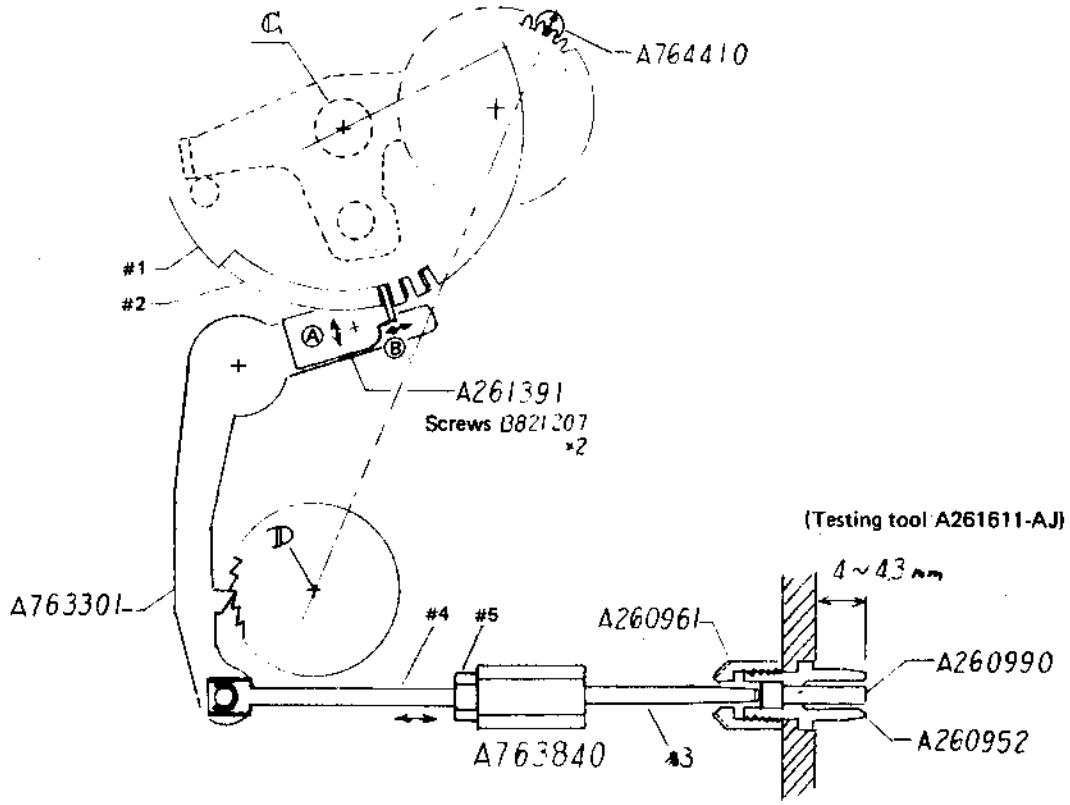
If not 4 mm, detach the M. right side cover and repair in the following manner:—

1) If the dividing plate (#1), dividing auxiliary plate (#2) and wind stopper pawl (A261391) are deformed, exchange the dividing plate set (A763100) and wind stopper pawl.
2) If the F. release shaft B (#3) is caught on the F. release cylinder B (A260961), then round the tip of the F. release shaft B, or if the hole is too tight, then slim the shaft down.
3) If the F. release shaft (A763840) is too short, loosen the F. release shaft nut (#4) and adjust the length of the F. release shaft A (#5) by screwing it out. Tighten the nut securely after making the adjustment.

7. Improper Frame Interval

The rotation of the counter roller shaft A (A764410) is in proportion to the advance of the film. Therefore, a line extended from the two pins on the counter roller shaft A must always be constant in its position between the dividing plate axle (C) and the wind-up gear D axle (D).

1) If the extended line from the two pins is not directed (not located) between points C and D, adjust by moving the wind stopper pawl in the arrow-indicated direction at (B).
2) If the extended line from the two pins is directed (located) between points C and D but its location or direction is not constant, then exchange the dividing plate set as the grooves #1 and #2 may be deformed.
3) If the wind stopper pawl is contacting the outer rim of #2, adjust the location of the wind stopper pawl in the arrow-indicated direction at (A) so that the F. (film) release pin protrudes 2 to 2.3 mm from the standard attachment plane (surface).
(do not change the length of the F. release shaft when undertaking this adjustment.)



8. Film is not Advanced: Spool Clutch Spring is Broken

The wind-up gear A (#1) rotates even when the spool metal (A261313) is prevented from rotating.

1) Open up the bottom of the spool holder on the left side of the film back and detach the upper spool shaft (A261320) by stopping rotation of the wind-up gear D and, at the same time, rotating the upper spool shaft to the right.
2) Then, rotate the spool clutch axle (A261293) to the right, too, and detach.
3) Wind the replacement spool clutch spring (A261882) around the spool clutch axle so that it does not overlap itself.
4) Assemble the spool clutch spring so that it is hooked on the grooves of the wind-stopper ratchet (A261302) and the spool metal and, then, tighten the upper spool shaft.

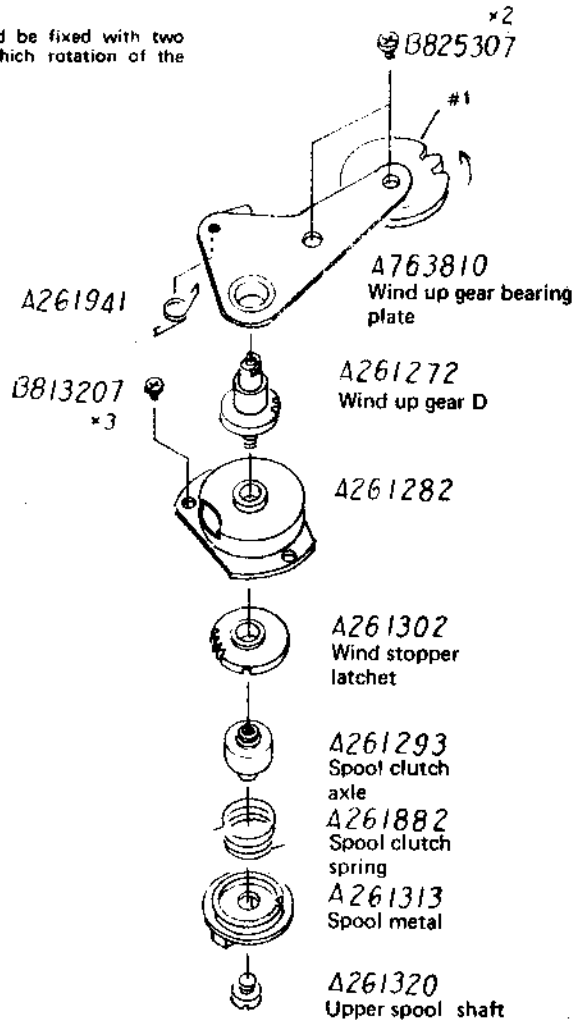
CAUTION:
Hold the wind-stopper ratchet from rotating and rotate the wind-up gear A (#1). The upper spool shaft should rotate but the spool metal should not, in this case. If the latter also rotates at the same time, the trouble may be due to:—

1) Deformed grooves of the dividing plate and dividing auxiliary plate.
2) Bent wind stopper pawl.
3) Broken pin of the counter roller shaft A, etc.

9. Unusual Noise with Winding Action: Grease has Dried Up in the Spool Clutch Axle

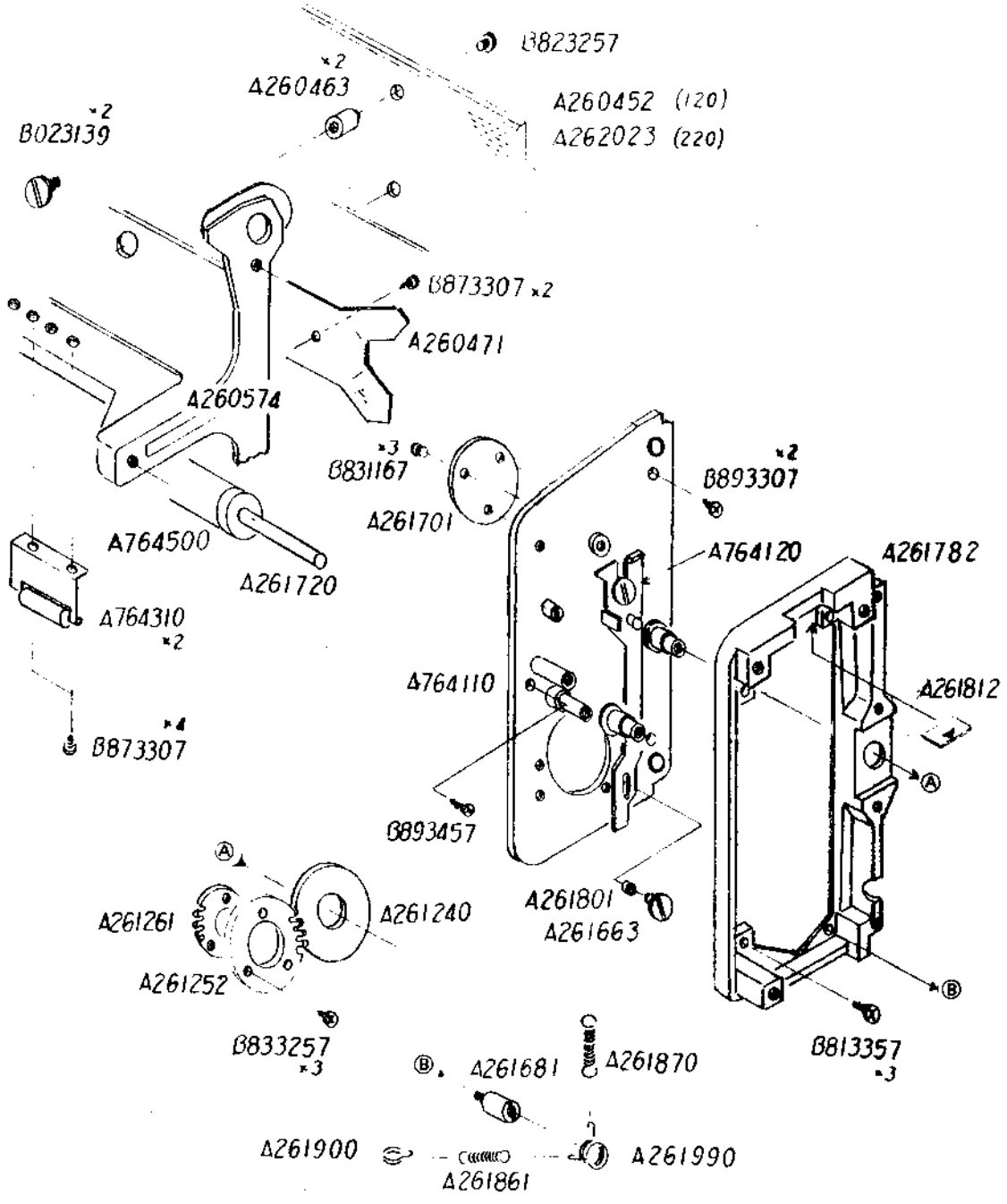
1) Noise caused by abrasion of the spool clutch axle and spool clutch spring is heard when the winding stopper lever engages.
   * Apply Liqui-Moly on the spool clutch axle and spool clutch spring.
   * Liqui-Moly is a molybdenum disulfide lubricant available from Lockrey Co., Ltd., U.S.A.

CAUTION:
The wind-up gear bearing plate should be fixed with two B825307 screws at the position in which rotation of the wind-up gear train is smooth.

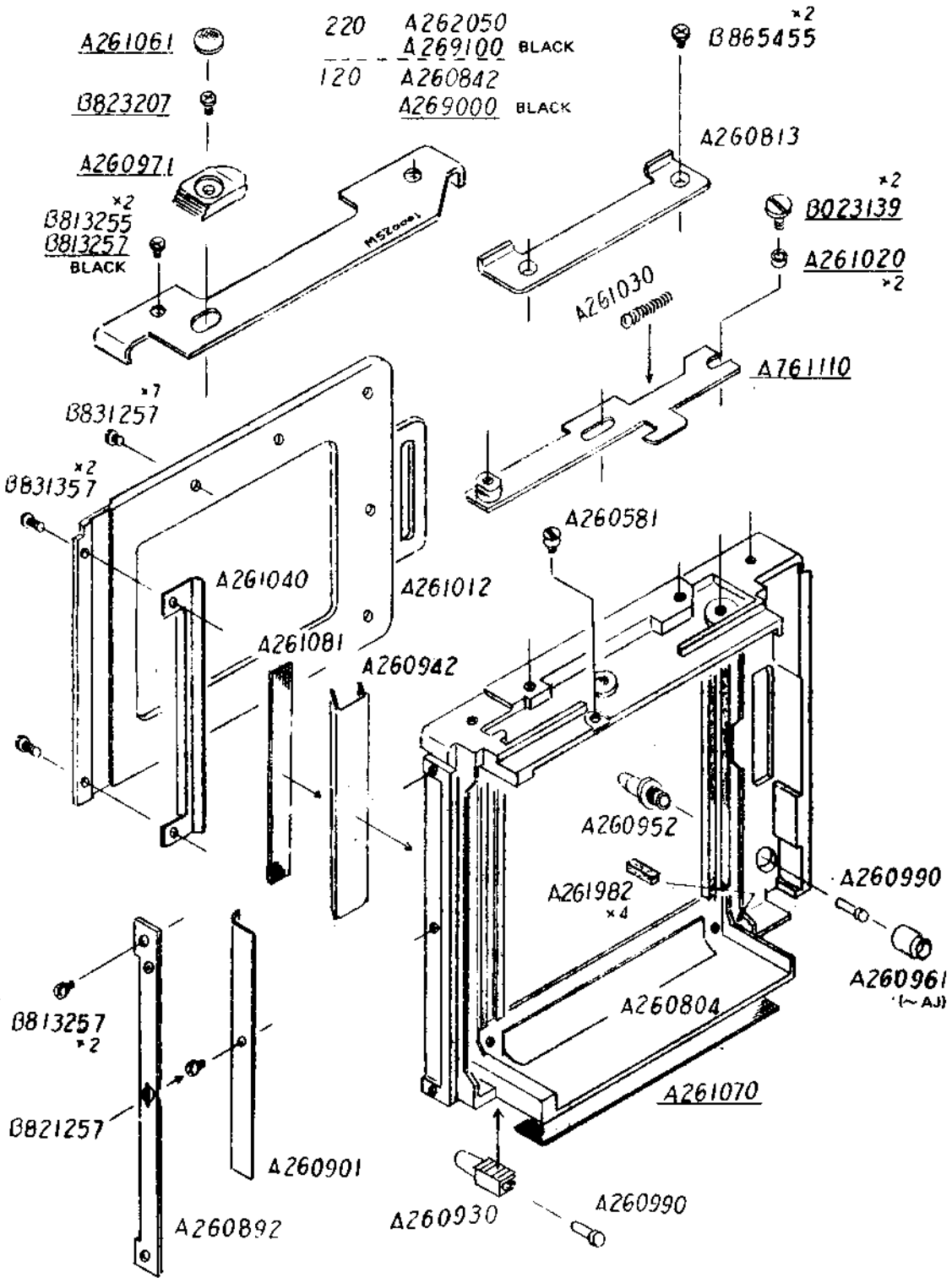


10. Others

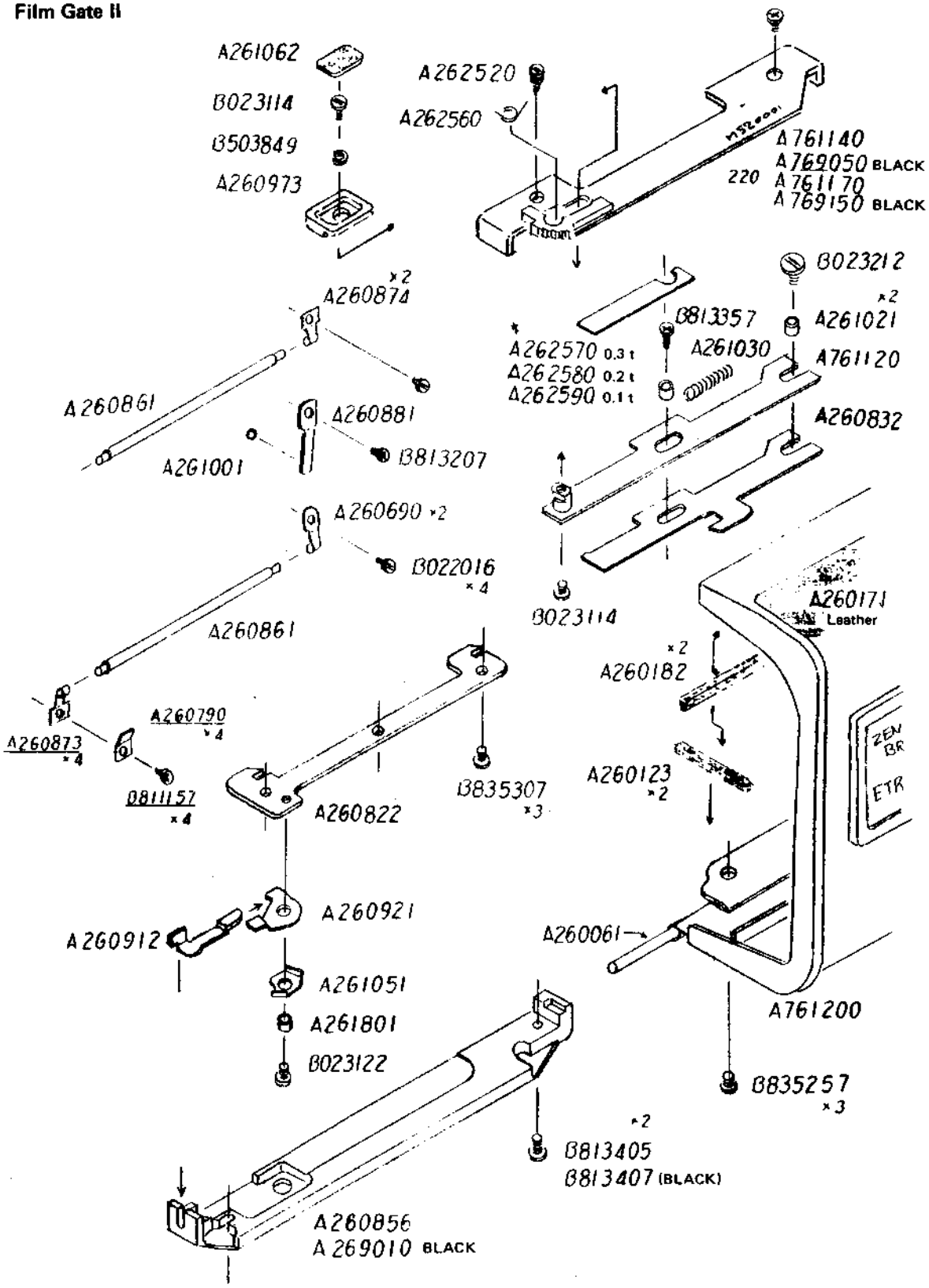
1) Exchange all plastic wind-up gear B's (A261252) for metallic parts.
2) Pressure plate (220) (A262023) is stepped on both sides.
3) The exchange of the pressure plate to which the pressure plate pin (A260463) is riveted also requires exchange of the pressure plate pin.
4) Assembly of the pressure plate with its top and bottom sides reversed will result in contact with the frame counter roller A and B (A764400 and A764500) and, therefore, it should be assembled properly.



Film Gate I


A261061
B823207
A260971
×2
B813255
B813257
BLACK
220 A262050
A269100 BLACK
120 A260842
A269000 BLACK
×2
B865455
A260813
×2
B023139
A261020
×2
A261030
A761110
×7
B831257
×2
B831357
A260581
A261040
A261012
A261081
A260942
A260952
A260990
A261982
×4
A260961
(~AJ)
A260804
A261070
B813257
×2
B821257
A260901
A260892
A260930
A260990

Film Gate II


A261062
B023114
B503849
A260973
A262520
A262560
A761140
A769050 BLACK
220 A761170
A769150 BLACK
B023212 ×2
A260874 ×2
B813357
A261021 ×2
A262570 0.3t
A262580 0.2t
A262590 0.1t
A261030
A761120
A260832
A260861
A260881
A261001
B813207
A260690 ×2
B022016 ×4
B023114
A260171 Leather
A260861
A260182 ×2
A260790 ×4
A260873 ×4
B811157 ×4
A260822
B835307 ×3
A260123 ×2
A260921
A260912
A260061
A261051
A261801
B023122
A761200
B835257 ×3
×2
B813405
B813407 (BLACK)
A260856
A269010 BLACK

11. Film Gate Set

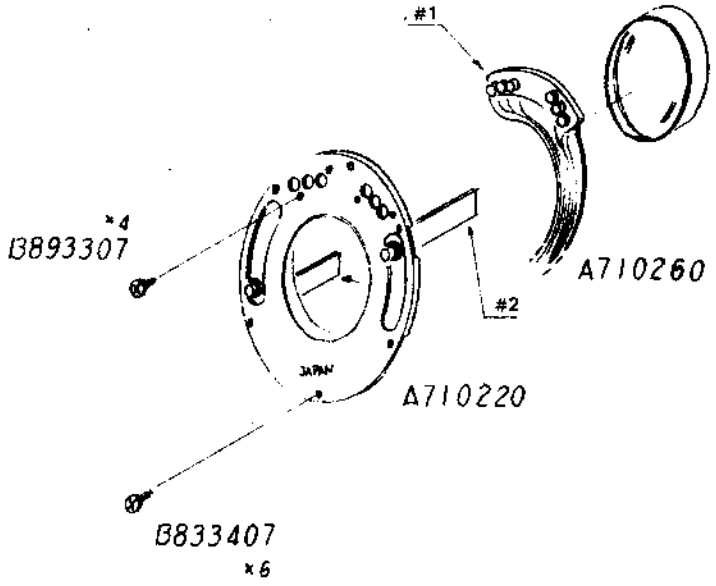
1) Exchanging the rear cover (A761200) for one that will double-lock (has a safety lock) means that the rear cover on page 38 will be changed to that on page 39.
2) When attaching the top cover (A761140) and bottom plate (A260856), attach so that they do not protrude beyond the standard attachment plane (surface) (the * -marked surface of A260804).
3) The top cover numbers should be unified at M52 ---, for 120 roll film, and M53 ----, for 220 roll film.
4) The bottom plate should be located so that F. release pin (A260990) moves lightly when it is attached.
5) The gate roller plates (A260874 x 2 and A260690 x 2) should be fixed in locations which will permit the two gate rollers (A260861) to rotate smoothly and thus prevent scratches to the film.

The 75 mm F2.8 Zenzanon-E Lens is representative of the five lenses (40 mm, 50 mm, 75 mm, 150 mm and 250 mm) presently available for the Zenza Bronica ETR single lens reflex camera. The other lenses can be repaired in practically the same manner.
Troubles occuring in the lens may actually be due to reasons on the camera body side and, therefore, it is important that the proper repairs be made in such instances. A simple method of checking the actual origin is to attach the saim lens to another camera body and/or attach another lens to the original camera body and see whether the defects still occur.

(1) Shutter Blades do not Open (when the Shutter Release Button is Depressed)

Check rotation of the setting ring unit (A710220). After setting the unit, press the locking lever (A210213) on the side of the bayonet mount and then return the setting ring unit. If it feels tight or seems to catch, then it should be exchanged.
Repair in the following manner:—

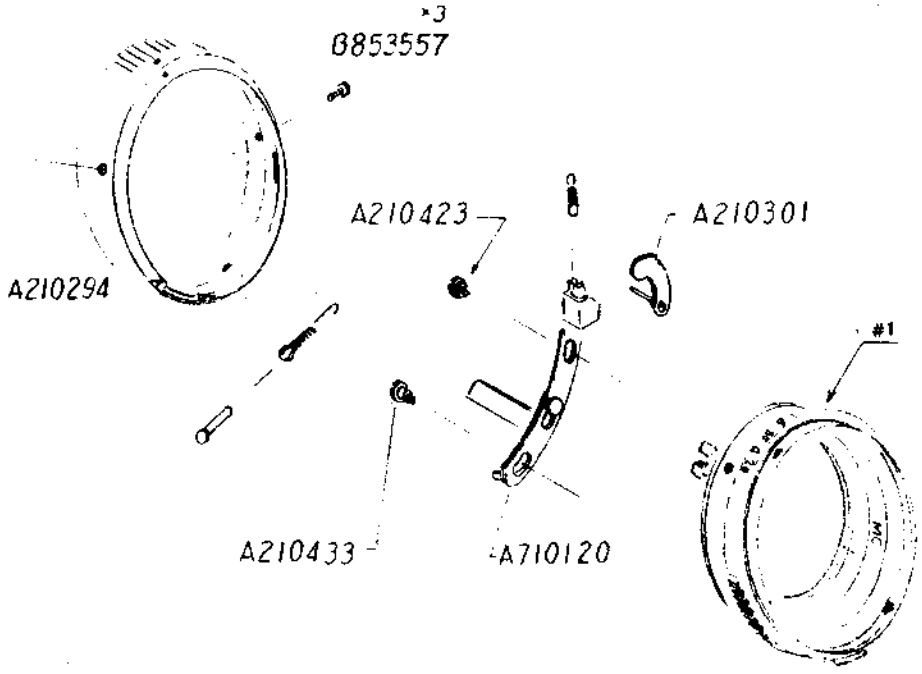
1) Loosen six B833407 screws.
2) Loosen four B893307 screws and detach the printed circuit board (#1).
3) Attach the printed circuit board to the replacement setting ring unit with the four B893307 screws which were detached in 2) above.
4) Align the lever sections (#2) of the setting ring unit to the grooves of the shutter assembly.
5) Repeat the setting and releasing actions and check the movement.



(2) Preset Action cannot be Confirmed (when Preset Lever is Pressed)

The shutter assembly is manually stopped down, by pressing preset lever (A210301) which, in turn, pushes preset arm set (A710120). Repair in the following manner (when the preset arm set does not move):—

1) Loosen three B853557 screws and detach the aperture ring block (#1).
2) Check movement of the preset arm set (A710120). If it does not move, then—
3) Loosen A210423 and A210433 screws and detach the preset arm set.
4) Since a change has been made in the surface painting of these three parts (in 3, above), they should all be exchanged for new replacement parts, in this case.
5) Assemble the aperture ring block while carefully checking alignment with the shutter actuating lever of the shutter assembly, the position of the time exposure lever and the positions of two aperture setting arms.



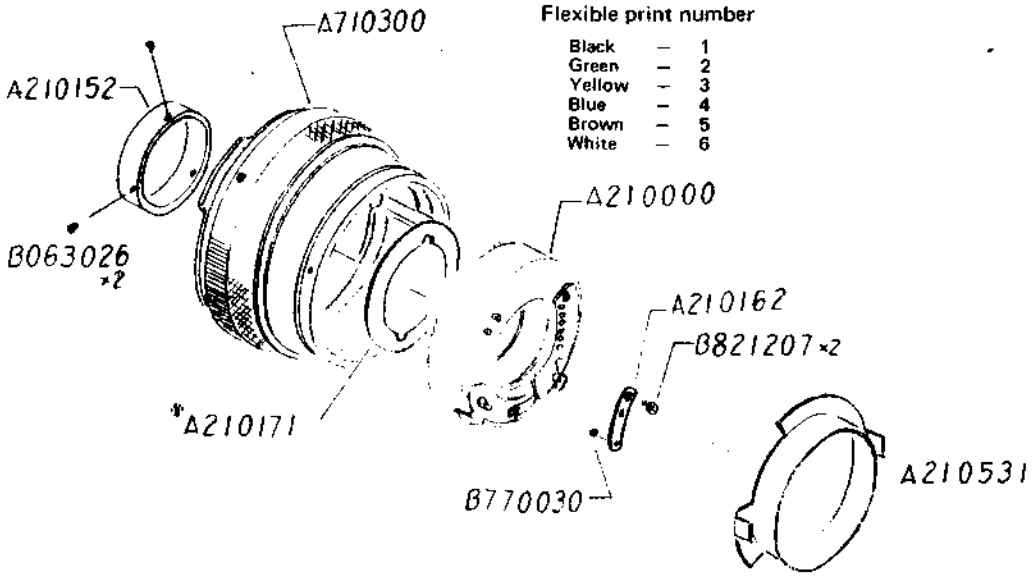
(3) Exchange of the Shutter Assembly

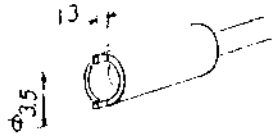
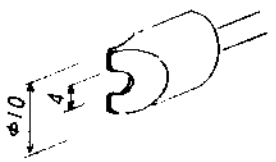
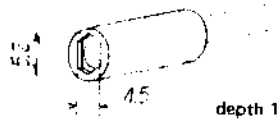
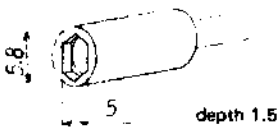
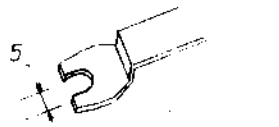
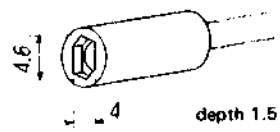
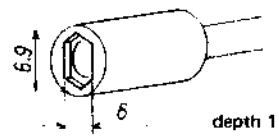
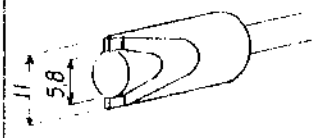
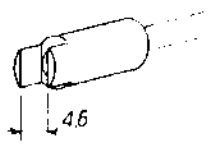
Disassemble the setting ring unit and aperture ring block, based on instructions in 1 and 2 preceding.

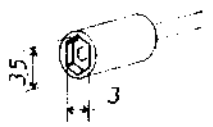
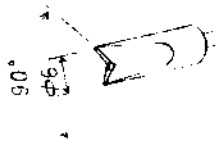
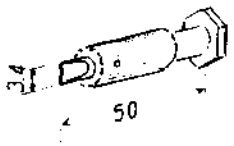
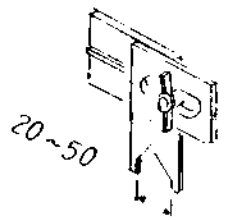
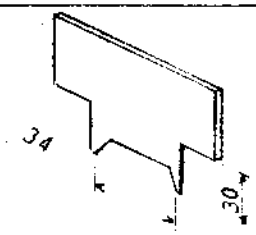
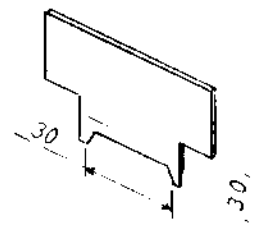
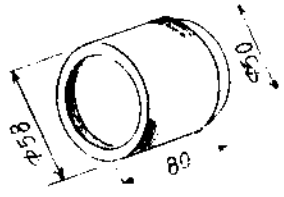
1) Detach light baffle ring (A210531) carefully so that it is not deformed. (Pull it out slowly as it is attached with bonding agent.)
2) Disconnect the six lead wires soldered to the printed circuit board.
3) Loosen two B063026 setscrews of the fixing ring (A210152) and revolve the fixing ring. The lens and shutter assembly will come out together, in this case.
4) Revolve the locking ring on the outside of the lens which will permet detachment of the lens.
5) Detach the time exposure click-plate (A210162) from the detached shutter assembly and attach it on the replacement shutter assembly.

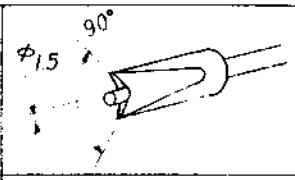
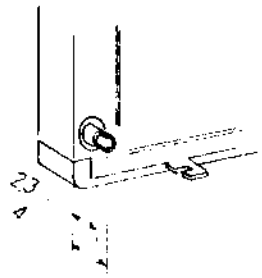
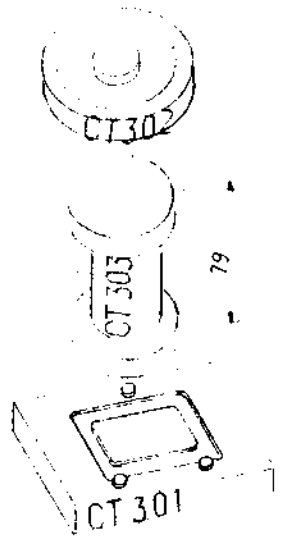
CAUTION:

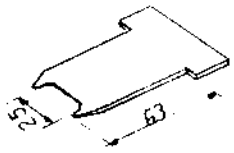
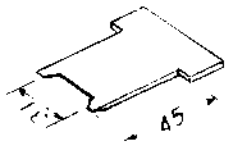
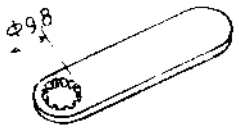
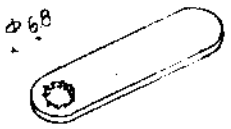
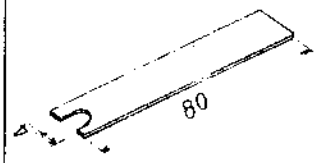
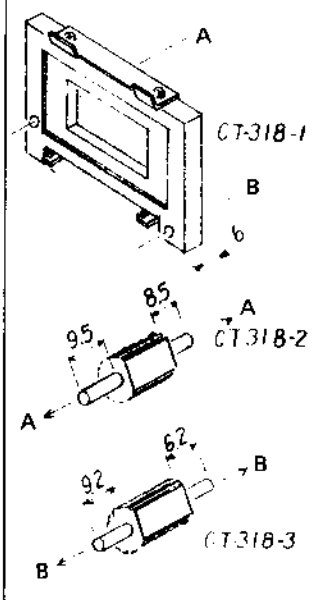
1) Do not change the thickness of the adjustment liners (A210171) even when the shutter assembly is exchanged.
2) The interval between lens elements is determined by the thickness of the shutter assembly. Therefore, screw in the lens element to its end so that there is no apparent clearance between the lens element and the shutter assembly.
3) Lens elements are only supplied with front and rear groups as a set, with the adjustment liners also specified at the time of exchange.

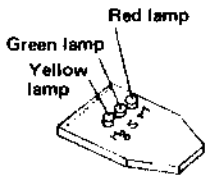
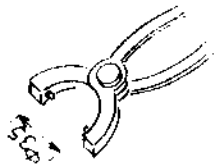
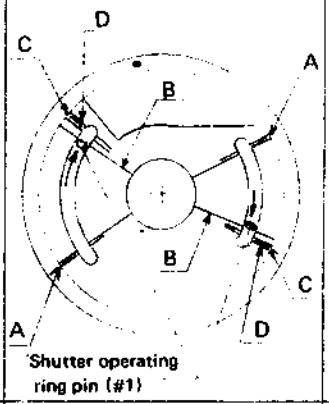


1-255670-AJ Screw driver		1-255670 for Crank catch setting screw.
1-256593-AJ Screw driver		1-256593 for Cable release socket.
1-255790-AJ Socket driver		1-255790 for Winding stopper claw spring holder. 1-230700 for Crank axle B (Speed grip).
1-250160-AJ Socket driver		1-250160 for Dark slide relay lever axle.
1-255230-AJ Wrench		1-255230 for Cam holding nut.
1-250130-AJ Socket driver		1-253561 for Bayonet pin spring holder 1-253772 for AE changeover rod guide.
1-252391-AJ Socket driver		1-750050 for Flash synchro socket (old type).
1-252394-AJ Screw driver		for Flash synchro socket (new type).
1-261550-AJ Screw driver		1-261552 for Dividing plate axle.

1-250211-AJ Socket driver		1-250211 for M switch lever axle.
1-256060-AJ Screw driver		1-256060 for Button ring nut.
1-253951-AJ Socket driver		1-253951 for Lens safety link guide.
1-251280-AJ Screw driver		1-251280 for Mirror arm setting screw.
1144-AJ Free size wrench		
1-210180-AJ-3 Wrench		for 75 mm Front lens ring nut.
1-210180-AJ-4 Wrench		for 75 mm Rear lens ring nut.
1-210482-AJ Rubber barrel		for Lens name ring.

1-260961-AJ Screw driver		1-260961 for F release cylinder B.
1-261611-CT Stroke adjusting tool		1-261600 for F release shaft A.
CT-301 -302 -303 Camera length standard		1-252227 Lens mount (Use with surface plate and dial gauge) Set dial gauge "0" with total length of 3 tools, then put camera body on the CT-301, and put CT-302 on the lens mount (1-252227) of the body, CT-303 is taken out. See dial gauge meter and adjust the length of the camera body.

1148-AJ-1 Wrench		for 250 mm
1148-AJ-2 Wrench		for 250 mm
1-252280-AJ Wrench		1-252280 for Shutter button ring. 1-254010 for Lens button ring.
1-254080-AJ Wrench		1-254080 for Lens release button.
1-253571 Wrench		1-253571 for Lens button shaft
CT-318-1 -2 -3 Back relay action testing tool		(Set CT-318-1 to camera body, and insert CT-318-2 and CT-318-3 to hole A or B.) CT-318-2, 9.5 mm Winding is stop, also release button is depressed. 8.5 mm Winding is not stop, also release button is not depressed. CT-318-3, 9.2 mm Back release button is depressed, also release button is not depressed. 6.2 mm Back release button is not depressed, also release button is depressed.

1-754500-PT M switch set adjusting tool		1-754500 for M switch set M switch set is adjusted following manner. (Set to camera body with battery.) When winding is charged, the red lamp is ON, and half depressing of release button, the red lamp is OFF, next the green lamp is ON, the yellow lamp is ON during the shutter is open.
1-210150-AJ-2 Wrench		1-210150 for shutter unit fixing ring.
CT-321 Winding stroke inspecting tool		(Set CT-321 to camera body without lens) 1) When mirror is upper position, the pin (#1) situates intervals A. 2) When winding is starting, the pin is reached line B simultaneously. 3) When winding is stop, the pin situates intervals C. 4) The pin is not over run line D under any conditions.

Zenza BRONICA®

ETR

AE FINDER E

ZENZA BRONICA IND., INC.

Use of the VOM (Volt-Ohm-Milliammeter) Tester

(1) In general, the tester is used for four types of measurements of (a) DC current, (b) AC voltage, (c) DC voltage and (d) resistances.
(2) Measurements of (c) DC voltage and (d) resistance are undertaken in the repair manual.
(3) When measuring (c) DC voltage and (d) resistances, as indicated in (2), the reading must always be made between two points.
(4) One of the points (base) must always be P-9 (GND) when measuring DC voltage or, in other words, measurements are based on the ground (earth) point. Furthermore, the black-colored minus (–) test lead must always be used on the grounding terminal, in this case.
(5) In the illustration of the tester range, measurements of DC voltage must always be made within the DCV range and measurements of resistance within the ohm (Ω) range.
(6) The numerals 250, 50, 10, etc., in the DCV range, show the maximum reading that is possible at that setting.
When checking the AE circuit of the ETR camera, however, only the three settings 10, 2.5 and 0.5 are used.
(7) The resistance settings shown as x100, x1K, etc., indicate the multiplications that must be made on the indicated reading and should be read as "times one hundred", etc. In other words, the reading must be multiplied by 100 which means that a reading of 10, when set to the x100 range, will be 1,000 ohms which is equivalent to 1 kiloohm. Or, in other words, the reading will be 1, in the same case, if the tester were to be set to the x1K range.
(8) Before making the resistance test, always be sure to calibrate the tester's circuit or, in other words, touch the two test prods together and adjust the knob (with the Ω indication) to get a zero reading.

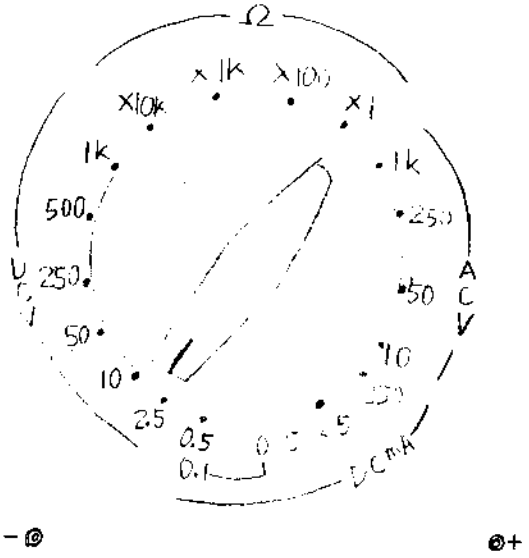
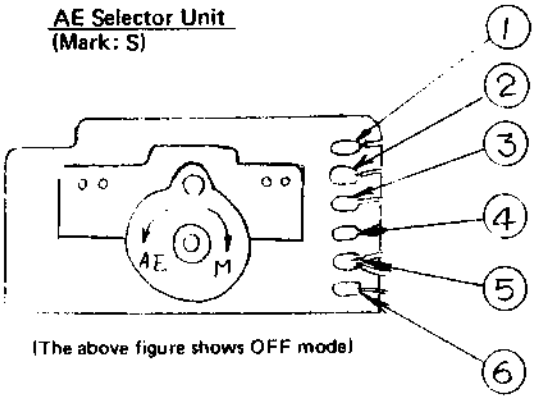


Fig-1

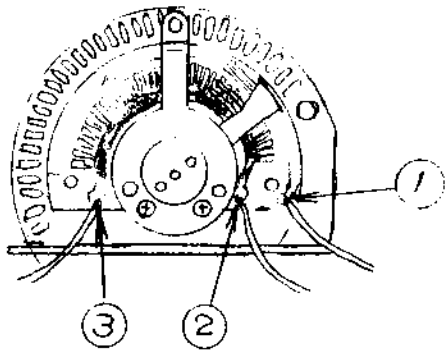
CAUTION
Extra care is required on handling of Main Circuit (A222040) such as solder iron and working bench should be properly grounded.

AE Selector Unit
(Mark: S)



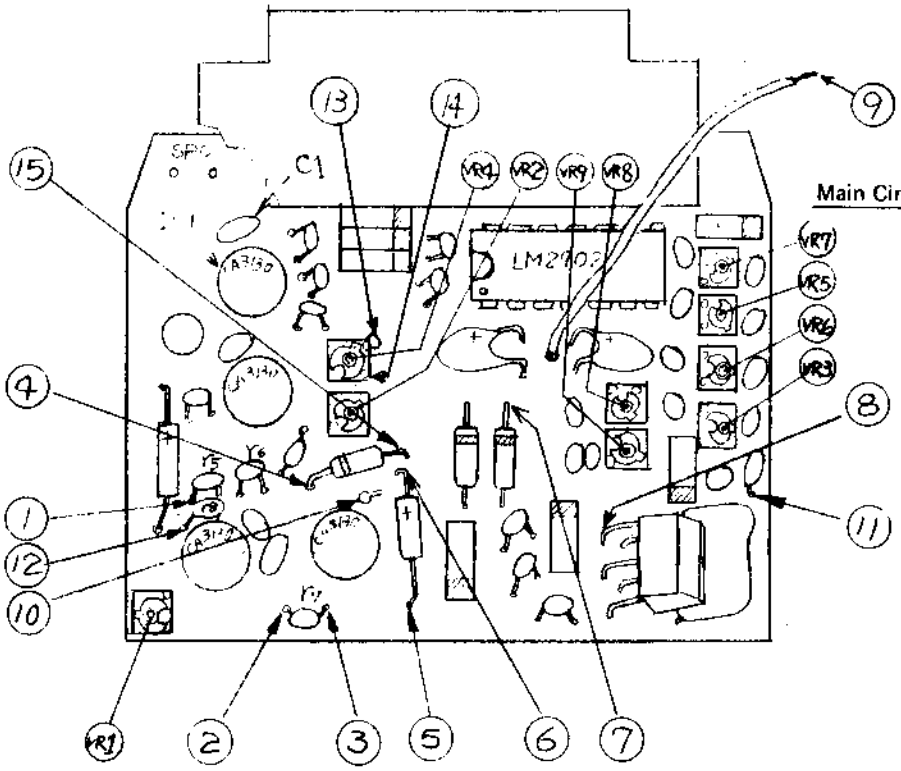
(The above figure shows OFF mode)

ASA Base Plate (Mark: A)



(The above figure shows ASA100 setting)

Main Circuit (Mark: P)



Note: (P-8) represents point 8 of Main Circuit (P), and as is the same manner (C-5) represents point 5 of AE contact pin base plate (C).

AE Contact Pin Base Plate
(Mark: C)

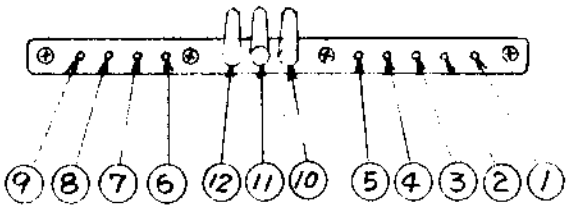
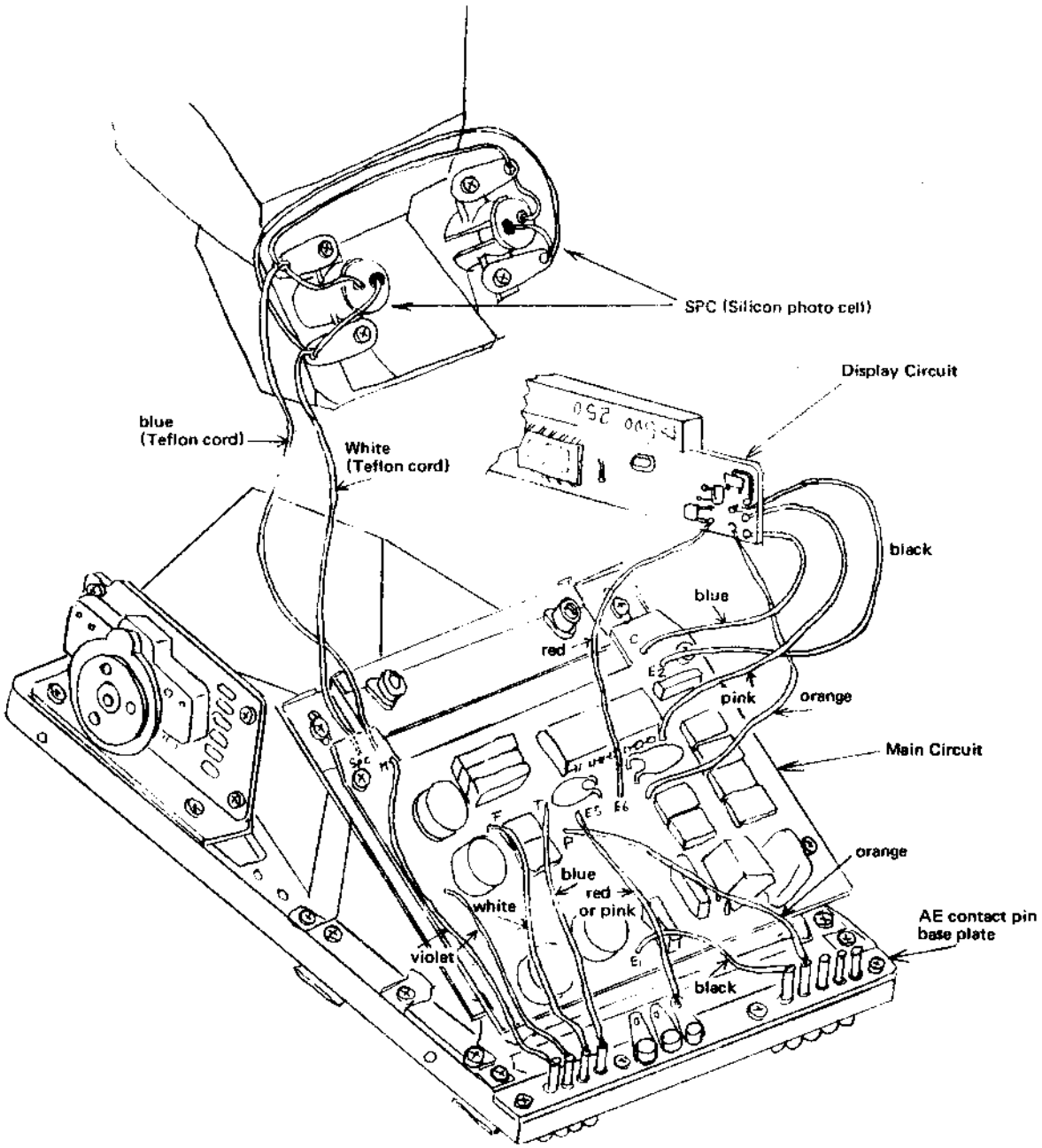


Fig-1

Wiring diagram of AE contact pin Base plate. Display Circuit & Silicon photo all.



Display Circuit (Mark: H)

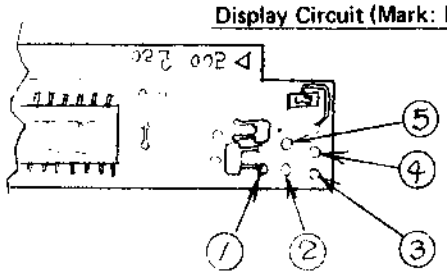


Fig-2

Wiring diagram of AE selector unit & ASA dial

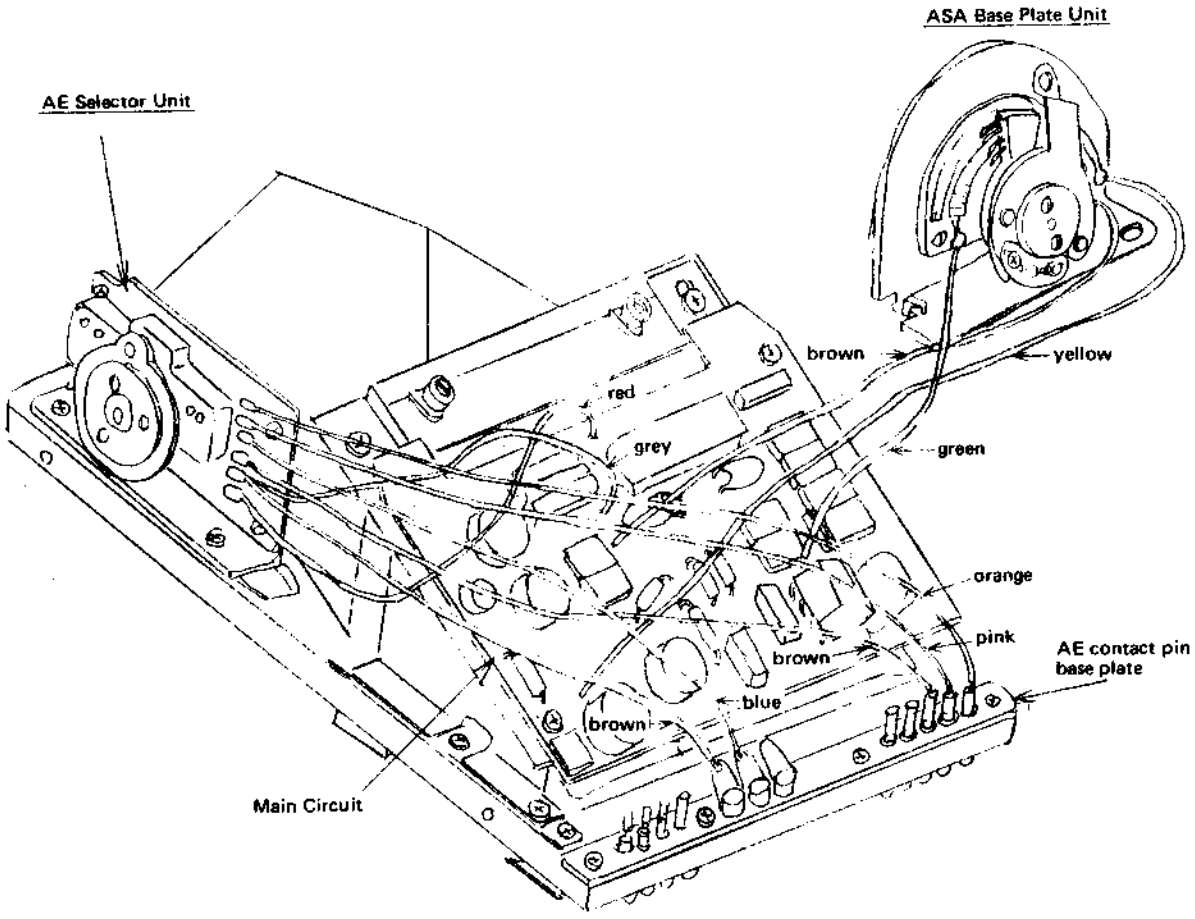
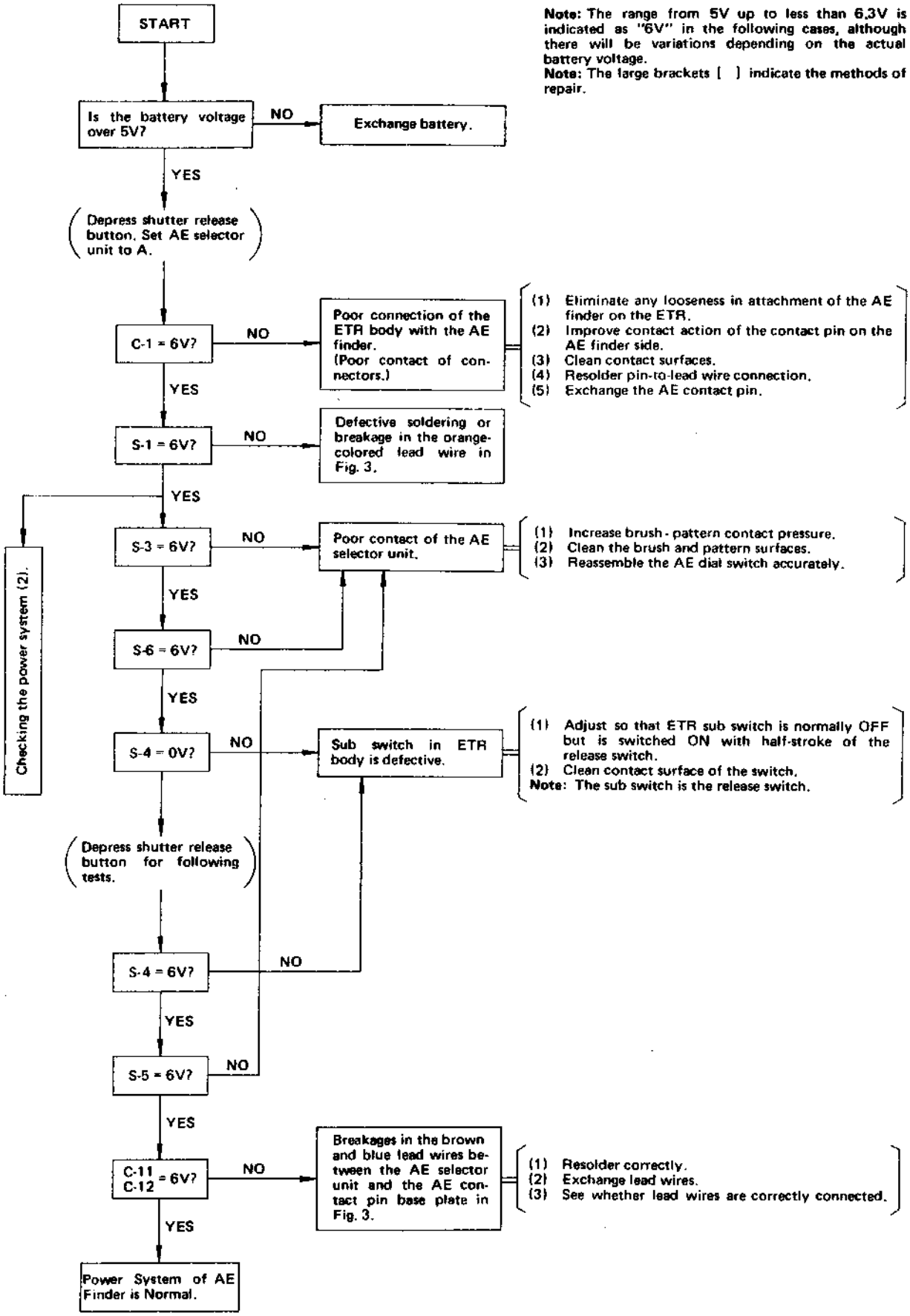


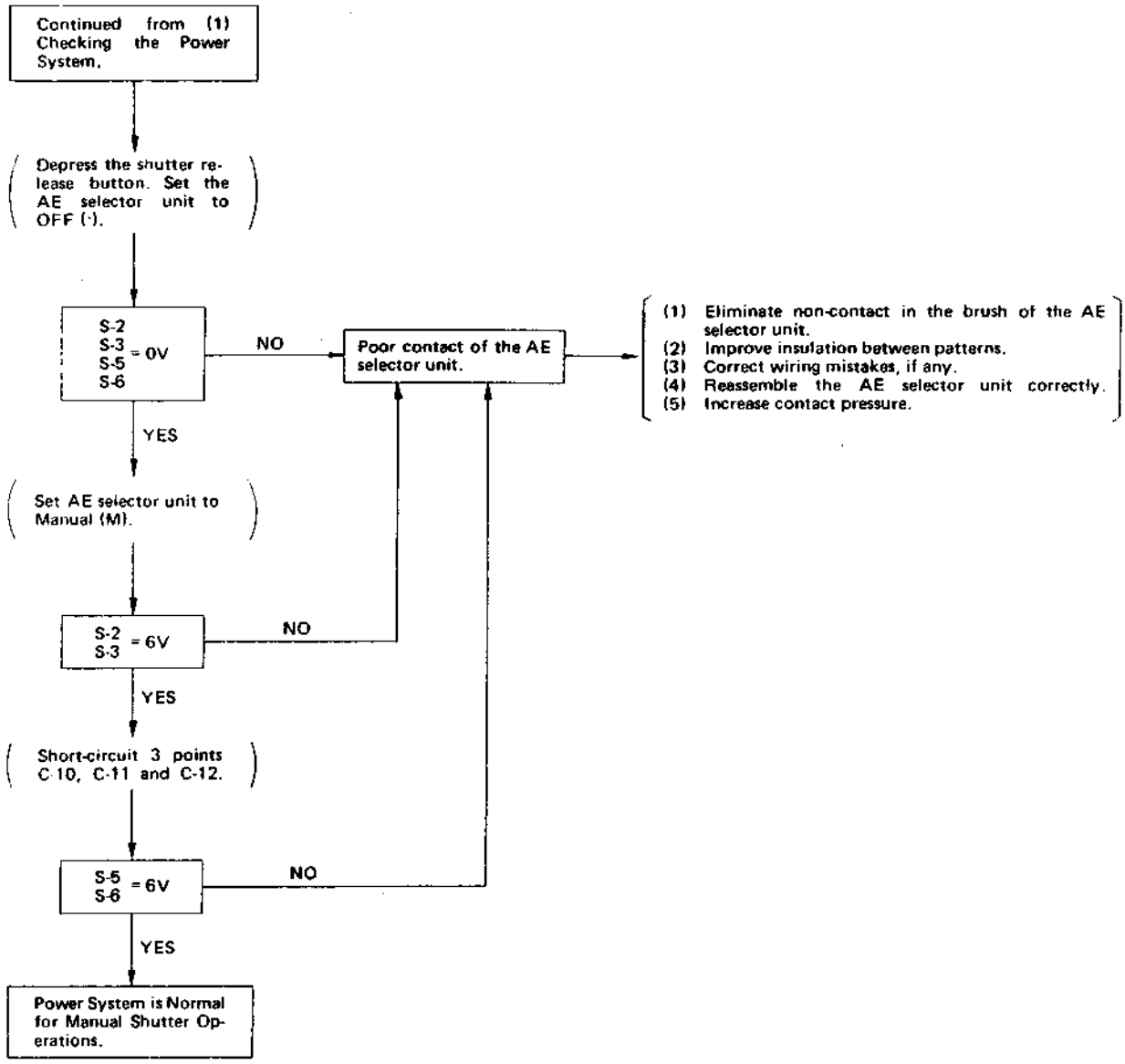
Fig-3

(1) Checking the Power System


START
Is the battery voltage over 5V?
NO
Exchange battery.
YES
Depress shutter release button. Set AE selector unit to A.
C-1 = 6V?
NO
Poor connection of the ETR body with the AE finder. (Poor contact of connectors.)
(1) Eliminate any looseness in attachment of the AE finder on the ETR.
(2) Improve contact action of the contact pin on the AE finder side.
(3) Clean contact surfaces.
(4) Resolder pin-to-lead wire connection.
(5) Exchange the AE contact pin.
YES
S-1 = 6V?
NO
Defective soldering or breakage in the orange-colored lead wire in Fig. 3.
YES
S-3 = 6V?
NO
Poor contact of the AE selector unit.
(1) Increase brush - pattern contact pressure.
(2) Clean the brush and pattern surfaces.
(3) Reassemble the AE dial switch accurately.
YES
S-6 = 6V?
NO
YES
S-4 = 0V?
NO
Sub switch in ETR body is defective.
(1) Adjust so that ETR sub switch is normally OFF but is switched ON with half-stroke of the release switch.
(2) Clean contact surface of the switch.
Note: The sub switch is the release switch.
Checking the power system (2).
Depress shutter release button for following tests.
S-4 = 6V?
NO
YES
S-5 = 6V?
NO
YES
C-11 = 6V?
C-12
NO
Breakages in the brown and blue lead wires between the AE selector unit and the AE contact pin base plate in Fig. 3.
(1) Resolder correctly.
(2) Exchange lead wires.
(3) See whether lead wires are correctly connected.
YES
Power System of AE Finder is Normal.

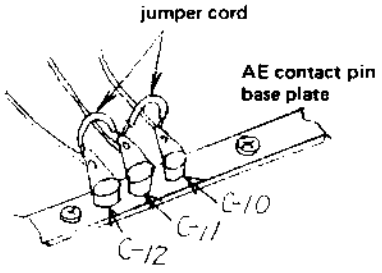
Note: The range from 5V up to less than 6.3V is indicated as "6V" in the following cases, although there will be variations depending on the actual battery voltage.
Note: The large brackets [ ] indicate the methods of repair.

(2) Checking the Power System


Continued from (1) Checking the Power System.
Depress the shutter release button. Set the AE selector unit to OFF (·).
S-2 S-3 S-5 S-6 = 0V
NO
Poor contact of the AE selector unit.
(1) Eliminate non-contact in the brush of the AE selector unit.
(2) Improve insulation between patterns.
(3) Correct wiring mistakes, if any.
(4) Reassemble the AE selector unit correctly.
(5) Increase contact pressure.
YES
Set AE selector unit to Manual (M).
S-2 S-3 = 6V
NO
YES
Short-circuit 3 points C-10, C-11 and C-12.
S-5 S-6 = 6V
NO
YES
Power System is Normal for Manual Shutter Operations.

(3) Checking the AUTO Exposure System

(Set the AE selector unit to AE. Manipulate the winding crank on the body. Short-circuit 3 points C-10, C-11 and C-12 on the AE contact pin base plate.)



Note: Short-circuiting 3 points C-10, C-11 and C-12 will connect all circuits to the power source.

Checking the Logarithmic Compression Amplifier

P10 = 6V — NO → Repeat (1) and (2) Checking the Power System.

YES

*1
C-9 = 0.3 - 0.6V
Are there any changes in the voltage with changes in the brightness of the light falling on the silicon photo cells?
(Increases in brightness should result in voltage increases.)

NO (0V or more than 0.6V) → Breakage, short-circuiting, poor soldering connections, mistaken wiring in the white and blue Teflon wires from the silicon photo cells or short-circuiting of C1 and IC1 in Fig. 1.

YES

Checking the Memory Circuit

C-8 = 0.3 - 0.6V
Does voltage change with same operations noted in *1?

NO (C-9 = 0V; C-9 > 0.6V) → (1) Defective memory switch. (2) Poor contact of AE contact pin base plate. (3) Breakage in purple lead wire in Fig. 2.

YES

P-1 = 0.3 - 0.6V — NO → Repeat same operations as *1.

YES

Checking the Operational Amplifier

P-3 = 2V ± 0.3V — NO → (1) Adjust brush so that memory switch is ON normally but OFF with half-stroke of shutter release. (2) Resolder improper connection of purple lead wire. (3) Clean AE contact pin base plate.

YES

P-2 = 0.6 ± 0.1 — NO → Improper adjustment of VR1. → (1) Set tester to DC 2.5V ~ 5V range. (2) If adjustment is not possible by rotating VR1, it is defective.

YES

(**Note:** If adjustment is not possible due to looseness or poor contact of the VR1, then exchange the main circuit.)

Checking ASA Film Speeds and F/numbers.

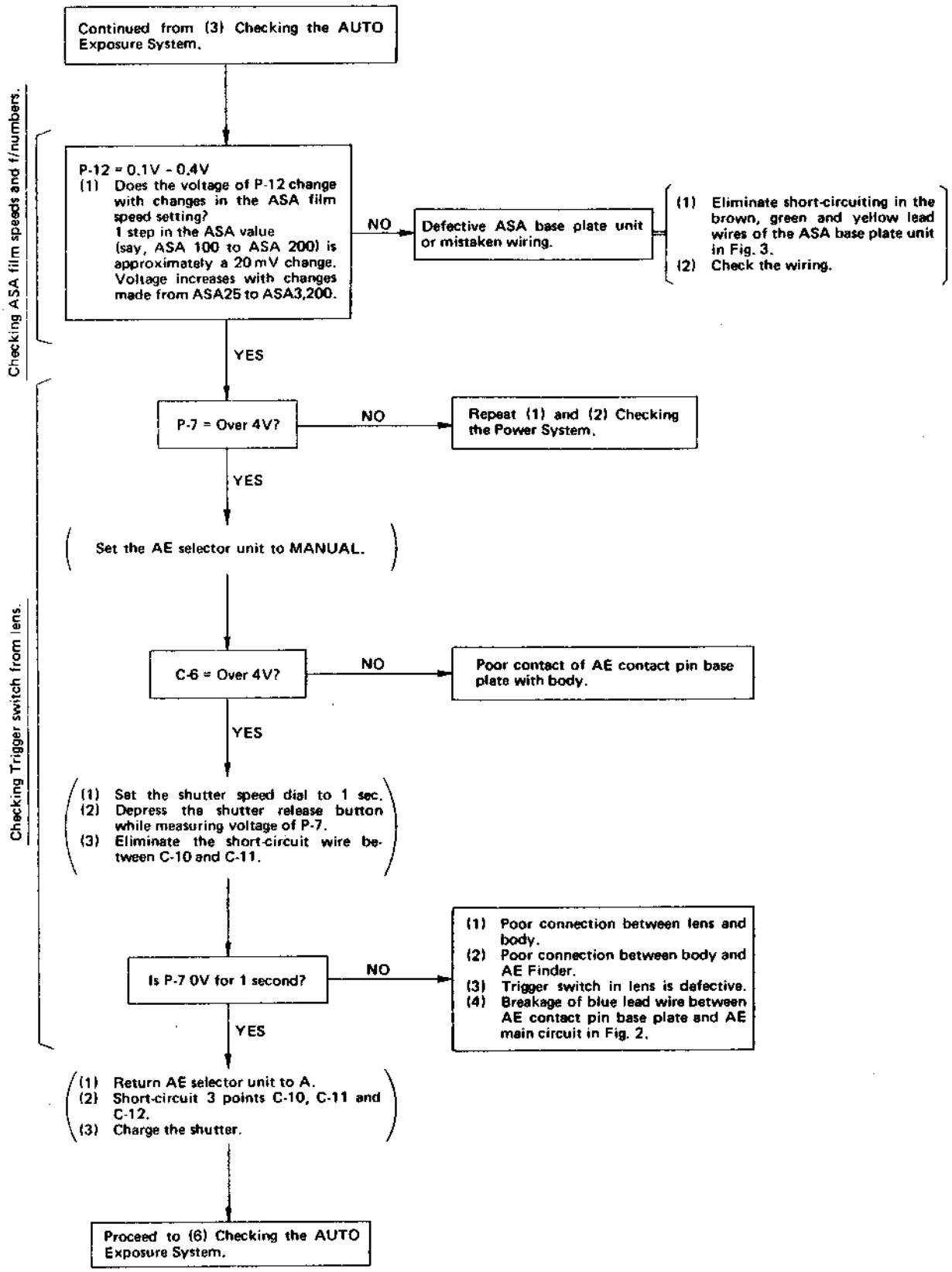
*2
P-12 = 0.1V - 0.4V
(1) Does voltage of P-12 change when the F/number of lens is changed? 1 stop is approx. 20 mV
Voltage increases with changes from F22 to F2.8.

NO → Proceed to (5) Checking the AUTO Exposure System.

YES

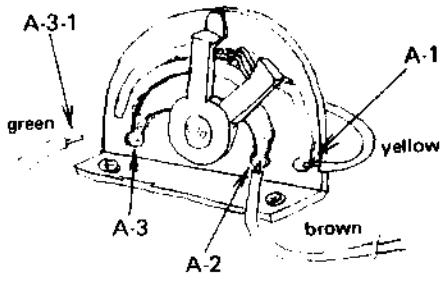
Proceed to (4) Checking the AUTO Exposure System.

(4) Checking the AUTO Exposure System


Continued from (3) Checking the AUTO Exposure System.
Checking ASA film speeds and f/numbers.
P-12 = 0.1V - 0.4V
(1) Does the voltage of P-12 change with changes in the ASA film speed setting?
1 step in the ASA value (say, ASA 100 to ASA 200) is approximately a 20 mV change. Voltage increases with changes made from ASA25 to ASA3,200.
NO
Defective ASA base plate unit or mistaken wiring.
(1) Eliminate short-circuiting in the brown, green and yellow lead wires of the ASA base plate unit in Fig. 3.
(2) Check the wiring.
YES
P-7 = Over 4V?
NO
Repeat (1) and (2) Checking the Power System.
YES
Checking Trigger switch from lens.
Set the AE selector unit to MANUAL.
C-6 = Over 4V?
NO
Poor contact of AE contact pin base plate with body.
YES
(1) Set the shutter speed dial to 1 sec.
(2) Depress the shutter release button while measuring voltage of P-7.
(3) Eliminate the short-circuit wire between C-10 and C-11.
Is P-7 0V for 1 second?
NO
(1) Poor connection between lens and body.
(2) Poor connection between body and AE Finder.
(3) Trigger switch in lens is defective.
(4) Breakage of blue lead wire between AE contact pin base plate and AE main circuit in Fig. 2.
YES
(1) Return AE selector unit to A.
(2) Short-circuit 3 points C-10, C-11 and C-12.
(3) Charge the shutter.
Proceed to (6) Checking the AUTO Exposure System.

(5) Checking the AUTO Exposure System

(Use the soldering iron and disconnect the green lead wire at A-3, on the ASA base plate unit, in Fig. 1.)



Continued from (3) Checking AUTO Exposure System

Checking the ASA dial.

Is the resistance between A-3 and A-2 on the ASA base plate unit, in the right drawing, 1.4 kiloohm?

NO → ASA dial circuit board is defective. → (1) Exchange the ASA dial circuit board.

YES

Does the resistance between A-1 and A-3, in the right drawing, change in the range 0 to 1.4 kiloohm when the ASA film speed is changed?

NO → ASA Dial brush is defective. → (1) Increase contact pressure of brush. (2) Clean the pattern on the ceramic base, as well as the brush. (3) Reassemble the ASA base plate unit correctly.

Note: Auto-exposure action will not be possible if the brush and pattern are not in contact even at one ASA film speed setting.

YES

Checking f/numbers.

*1
Does the resistance between P-13 and P-9 on the AE main circuit change in the range 200 ohms to 1.4 kiloohm, when the F/number is changed?
(F2.8 = 1.4 kiloohm; F22 = 200 ohms.)

NO → (1) Poor connection of the AE contact pin base plate. (2) Poor contact of lens connector. (3) Breakage of the white lead wire in Fig. 2. (4) Breakage of the black lead wire in Fig. 2. (5) Defective lens. → (1) Eliminate looseness in the AE contact pin base plate and lens connector, by re-attaching correctly. (2) Clean contacts of the contact pin base plate and connector. (3) Exchange the lens.

YES

Check & adjust ASA film speeds & f/numbers.

*1
Does resistance between P-9 and P-14 change in the range 3.6 kiloohms to 200 ohms, when the F/number is changed?
(1 step in the F/number is 200 ohms.)

NO → Defective VR4. → Exchange the AE main circuit.

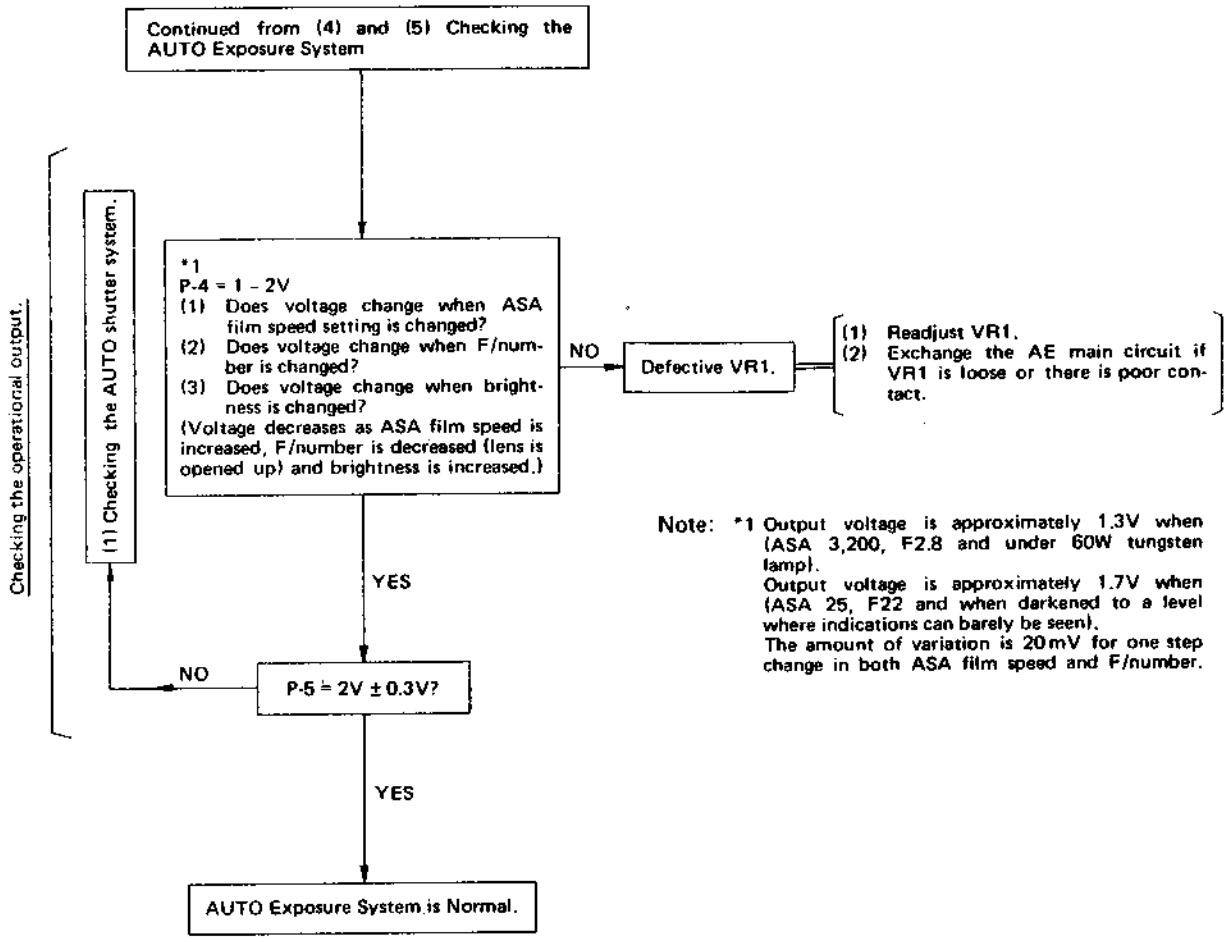
YES

Proceed to (6) Checking the AUTO Exposure System.

Note: Changes in the resistance reading in approximately 200 ohm steps will be satisfactory within the indicated range, when the operations noted in *1 are undertaken.
It will not be necessary to take readings for every step.

Note: (Resolder the green lead wire A-3-1 to the ASA base plate unit at A-3, upon completing the measurements.)

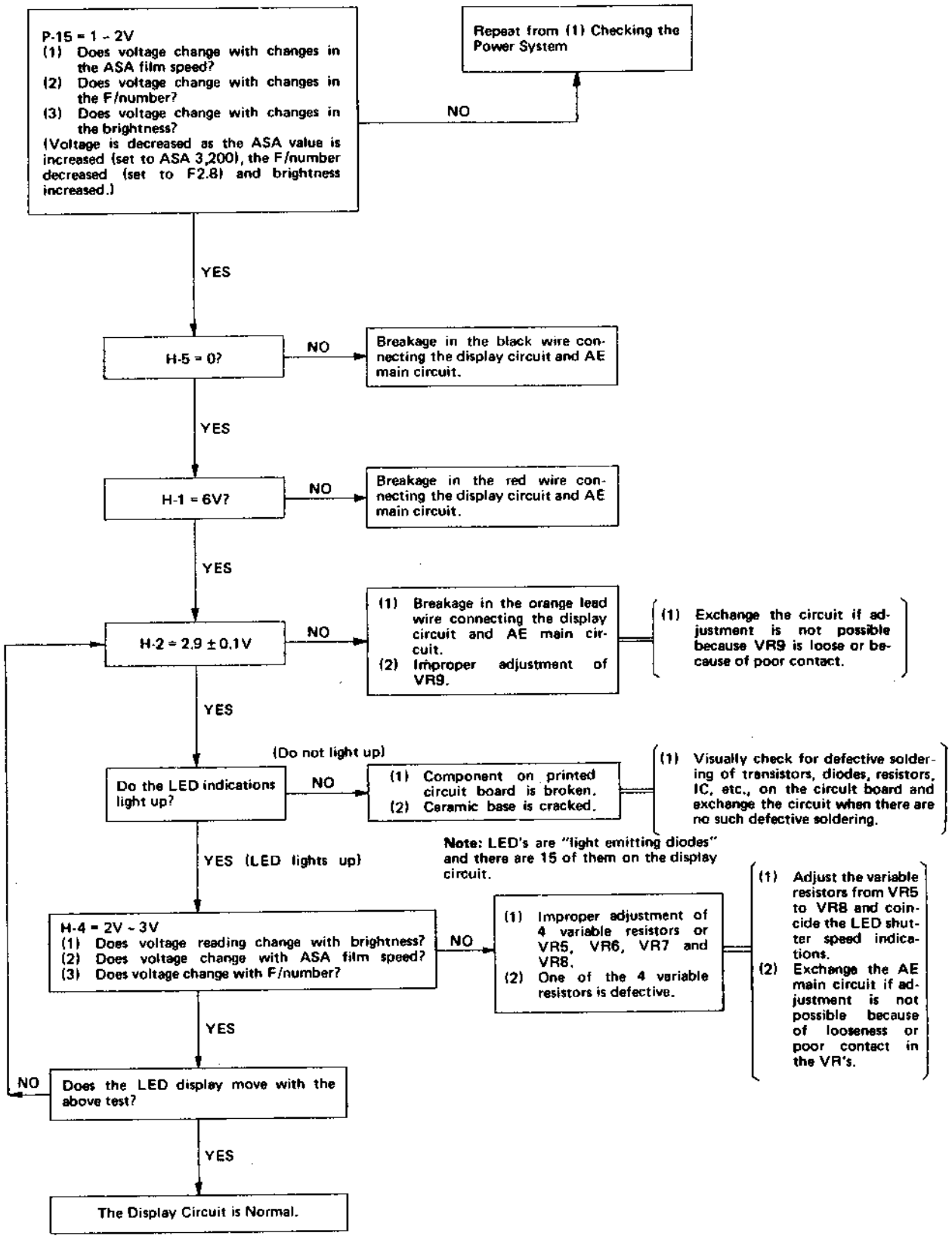
(6) Checking the AUTO Exposure System


Continued from (4) and (5) Checking the AUTO Exposure System
Checking the operational output.
(1) Checking the AUTO shutter system.
*1
P-4 = 1 - 2V
(1) Does voltage change when ASA film speed setting is changed?
(2) Does voltage change when F/number is changed?
(3) Does voltage change when brightness is changed?
(Voltage decreases as ASA film speed is increased, F/number is decreased (lens is opened up) and brightness is increased.)
NO
Defective VR1.
(1) Readjust VR1.
(2) Exchange the AE main circuit if VR1 is loose or there is poor contact.
YES
NO
P-5 = 2V ± 0.3V?
YES
AUTO Exposure System is Normal.

Note: *1 Output voltage is approximately 1.3V when (ASA 3,200, F2.8 and under 60W tungsten lamp).
Output voltage is approximately 1.7V when (ASA 25, F22 and when darkened to a level where indications can barely be seen).
The amount of variation is 20mV for one step change in both ASA film speed and F/number.

(7) Checking the Display System

Note: C-10, C-11 and C-12 should be short-circuited and the AE selector unit should be set to A.

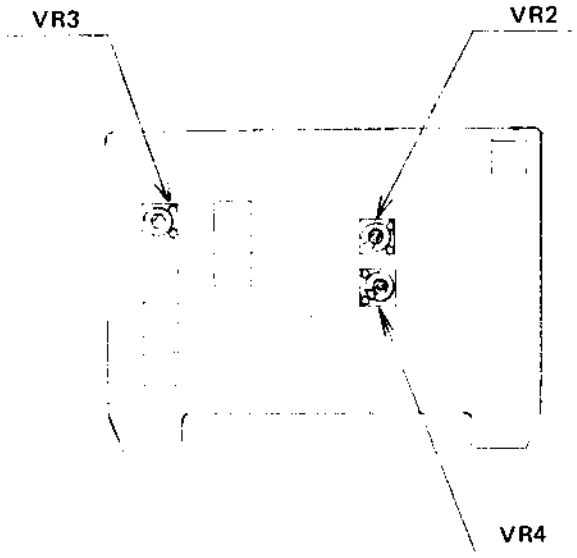

P-15 = 1 ~ 2V
(1) Does voltage change with changes in the ASA film speed?
(2) Does voltage change with changes in the F/number?
(3) Does voltage change with changes in the brightness?
(Voltage is decreased as the ASA value is increased (set to ASA 3,200), the F/number decreased (set to F2.8) and brightness increased.)
NO
Repeat from (1) Checking the Power System
YES
H-5 = 0?
NO
Breakage in the black wire connecting the display circuit and AE main circuit.
YES
H-1 = 6V?
NO
Breakage in the red wire connecting the display circuit and AE main circuit.
YES
H-2 = 2.9 ±0.1V
NO
(1) Breakage in the orange lead wire connecting the display circuit and AE main circuit.
(2) Improper adjustment of VR9.
(1) Exchange the circuit if adjustment is not possible because VR9 is loose or because of poor contact.
YES
(Do not light up)
Do the LED indications light up?
NO
(1) Component on printed circuit board is broken.
(2) Ceramic base is cracked.
(1) Visually check for defective soldering of transistors, diodes, resistors, IC, etc., on the circuit board and exchange the circuit when there are no such defective soldering.
YES (LED lights up)
Note: LED's are "light emitting diodes" and there are 15 of them on the display circuit.
H-4 = 2V ~ 3V
(1) Does voltage reading change with brightness?
(2) Does voltage change with ASA film speed?
(3) Does voltage change with F/number?
NO
(1) Improper adjustment of 4 variable resistors or VR5, VR6, VR7 and VR8.
(2) One of the 4 variable resistors is defective.
(1) Adjust the variable resistors from VR5 to VR8 and coincide the LED shutter speed indications.
(2) Exchange the AE main circuit if adjustment is not possible because of looseness or poor contact in the VR's.
YES
NO
Does the LED display move with the above test?
YES
The Display Circuit is Normal.

Adjustment of the Exposure at the Film Plane

In addition to the AE Finder and ETR camera body, it will also be necessary to use the 75 mm Zenzanon-E lens, a VR adjusting driver, an EE Camera Tester (Model ST-70B1) or equivalent and either battery or voltage regulator.
Attach the AE Finder to the ETR body, as well as lens to the body, insert battery or connect the voltage regulator, etc., and adjust the exposure at the film plane, in the following manner:—

(1) Set conditions to ASA 100, LV 11 and F8.
Rotate VR4 and adjust to get exposure tolerance within ±0.05EV.
Clockwise rotation . . . . . EV minus (-) direction.
Counter-clockwise rotation . . . EV plus (+) direction.
(2) Set conditions to ASA 100, LV 15 and F11 (1/250 sec.).
Check whether exposure is within ±0.3 EV.
(3) Set conditions to ASA 100, LV 7 and F8 (1/2 sec.).
Check whether exposure is within ±0.3 EV.
(4) Set conditions to ASA 3,200 LV 7 and F8 (1/60 sec.).
Confirm whether exposure is within ±0.5 EV.

NOTE:
If adjustments are not possible to the limits specified for the conditions noted for (2) and (3), after adjusting to zero EV (0 EV) under conditions specified for (1), then adjust by revolving VR2. However, in this case, alternate adjustments under conditions specified for (1) and (2).
If, in the same manner, adjustments are not possible to the limit specified for the condition noted in (4), adjust by revolving VR3. If (1) is 0 EV and (4) is a +EV, in this case, revolve VR3 counter-clockwise.
If (1) is 0 EV and (4) is a -EV, revolve VR3 clockwise.



Adjustment of the LED Display Indications

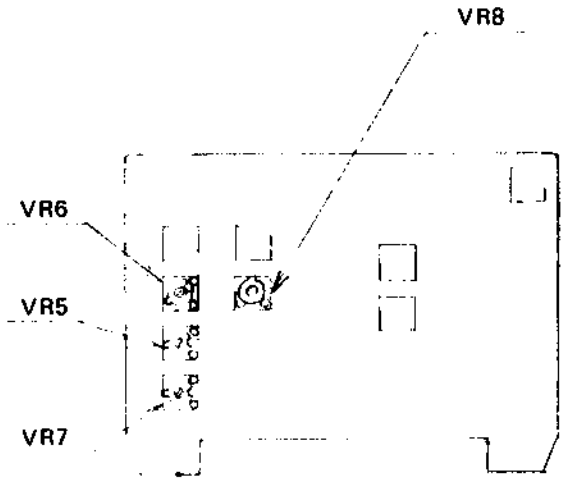
The following adjustments must be made after completing adjustment of the exposure at the film plane, as otherwise the display indications may not be correct.
In addition to the AE Finder on the ETR body, adjustments will also require the 75 mm Zenzanon-E lens, a VR adjusting driver, an EE Camera Tester (Model ST-70B1) and either battery or voltage regulator, in the same manner as for the previous adjustment.

(1) Set conditions to ASA 100, LV 7 and F8.
Revolve VR6 and coincide the LED shutter speed indication to "2" when the display button is depressed.
(2) Set conditions to ASA 100, LV 11 and F8.
Revolve VR7 and coincide the LED indication to "30".
(3) Set conditions to ASA 100, LV 15 and F8.
Confirm that the LED indication is "500", when the display button is depressed.

NOTE:
Should "250" or the over-exposure (▶) mark appear in the case of (3), after the adjustments for (2) have been made as above, then revolve VR8 and adjust so that the LED indications for (2) and (3) are "30" and "500" respectively.

(4) Set conditions to ASA 100, LV 4 and F8 confirm that the LED indications is "4S".
(5) Set conditions to ASA 3,200, LV 4 and F8 and confirm that "8" is displayed.
(6) Finally, confirm that the LED indication is "8" when conditions are ASA 100, LV 9 and F8 and "4" when conditions are ASA 50, LV 9 and F8.

NOTE:
If the above LED indications do not appear when the display button is depressed, then revolve VR5 for making the appropriate adjustments.



1. Winding is not Possible

Strip off the winding lever cover leatherette (A230970) and winding lever cover (A230250) and tighten the exposed fixing screw (A230261, which is a left hand screw). (When tightening the fixing screw, hold the winding connector which couples with the film winding crank on the camera body.) If winding is possible with the winding lever (A730030), then undertake the following repair:—

1) Take off the winding lever by loosening four B813407 screws.
2) Loosen the three B893307 screws and detach the speed grip top plate (A230220).
3) Since the winding claw (#1) of the winding wheel (A730050) is riding on the wind-stopper ratchet (#2), in this case, loosen the fixing screw (A230261) and then press on the part indicated as A, in the drawing, so that the winding claw (#1) catches the wind-stopper ratchet teeth. (This operation should be undertaken without detaching the winding wheel, or in the condition shown in Fig. 2.)
4) Apply Loc-Tite to the fixing screw (A230261) and screw it in securely.
5) If the winding wheel is loose in the vertical direction, adjust with washers (B530211).

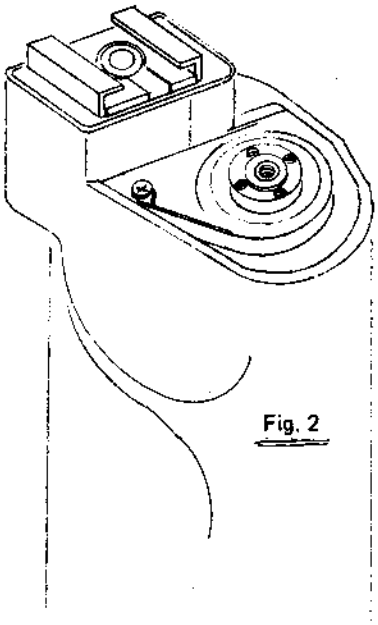


Fig. 2

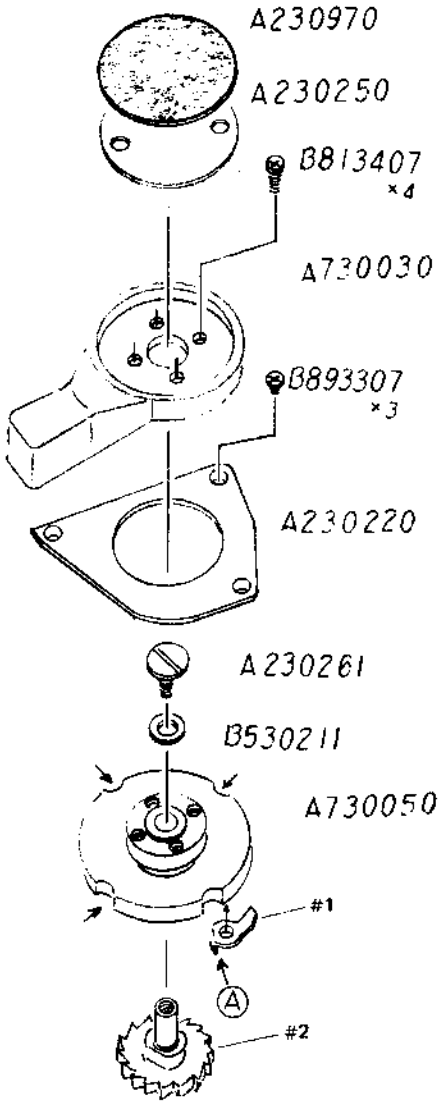


Fig. 1

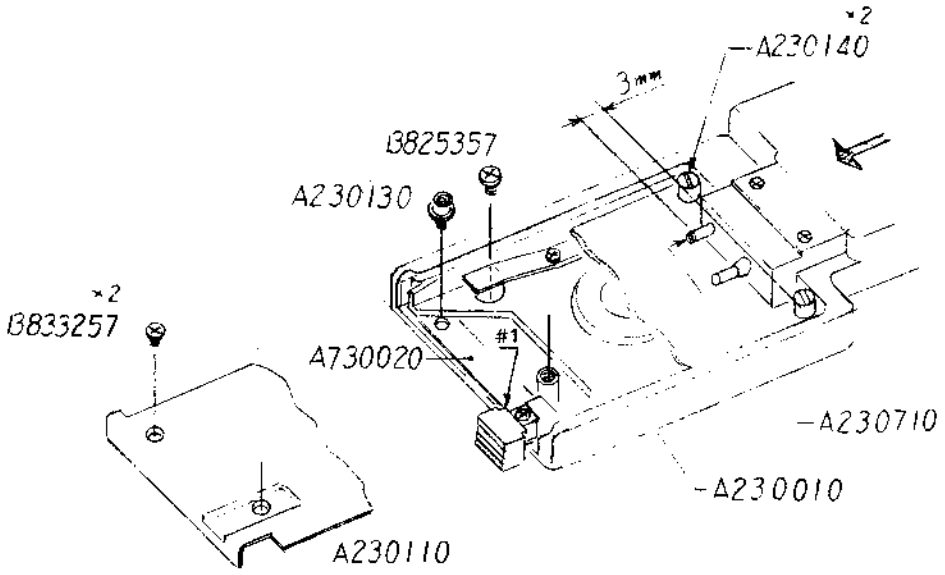
2. Release Action is not Possible

Check in the following manner:

1) See whether the release pin (A230710) extends 3 mm more than the upper stopper pin (A230140). (If extension is insufficient, take off the bottom plate (A230790), loosen the release pin fixing screw (B813227) and then screw in release pin B(A230720) sufficiently to extend the release pin (A230710) the required amount. See page 4.)
2) Attach the Speed Grip to the camera body, without locking it. Next, push the Speed Grip towards the camera body or in the arrow-indicated direction in the drawing. If release action is possible, in this case, the stopper plate is loose with the result that the Speed Grip is away from the camera body and the release stroke is not long enough.

Repair as follows:—

1) Loosen two B833257 screws and two stopper pins (A230140) and take off the base plate (A230110). The stopper (#1) should be pushed down, when detaching the base plate.
2) Exchange the safety stop (A230100, #1) if its edge is rounded. Then retighten B825357 and A230130 screws.



3. Flash Synch is not Possible

1) The synch connector pin (#1) is not extended up to 6 mm from the stopper pin (#2) and, therefore, is not in contact with the camera body.

Repair as follows:—

The connector pin (#1) is insert-molded in the new contact base (A230772) and, therefore, cannot slip out.

a) Loosen two B815457 screws and detach the contact base.
b) Disconnect the green-colored wire which is connected to the old connector pin (#1) and connect it to the new contact base, when making the exchange.

2) If continuity does not exist between the connector pin (#1) and the accessory shoe contact pin (#3), when tested, then —
   a) Loosen two B815457 screws of the contact base and check connection of the connector pin (#1) and the green-colored lead wire. If disconnected, re-solder properly.
   b) Pull out the accessory shoe base plate (A230810), loosen four B893457 screws and take off the accessory shoe mount (A230800). Pull up the contact pin (#3) slightly and check connection of the contact ring (#4) and the green-colored lead wire. If disconnected, re-solder. If the nut (B410057) is loose, the contact pin (#3) and contact ring (#4) will not contact and, therefore, the nut should be tightened strongly, too.
3) When continuity does not exist between the accessory shoe mount (A230800) and the pressure plate (A230040), then —
   a) Loosen two B833257 screws and two stopper pins (#2), take off base plate (A230110) and check connection of #5 and the black-colored wire. If connected, re-solder properly.
   b) Next, detach the accessory shoe mount and check connection of #6 and the black-colored lead wire. Re-solder if disconnected.

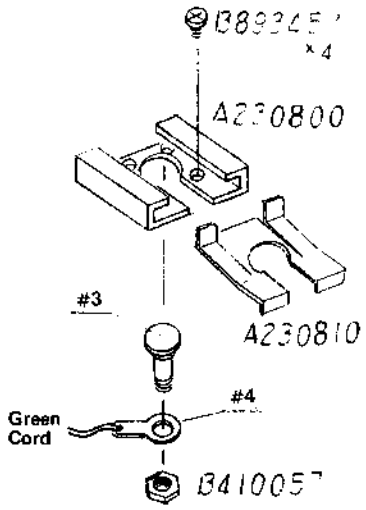


Fig. 3

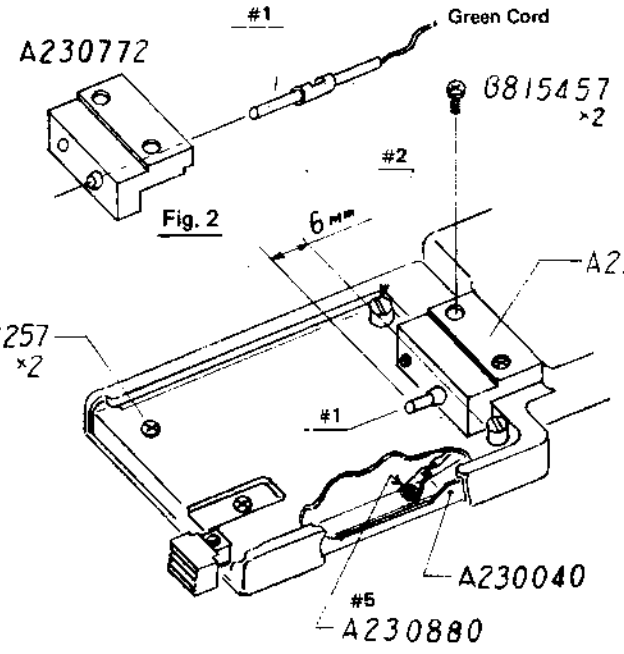
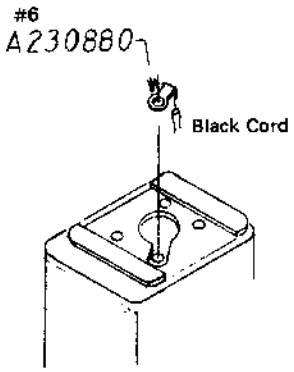
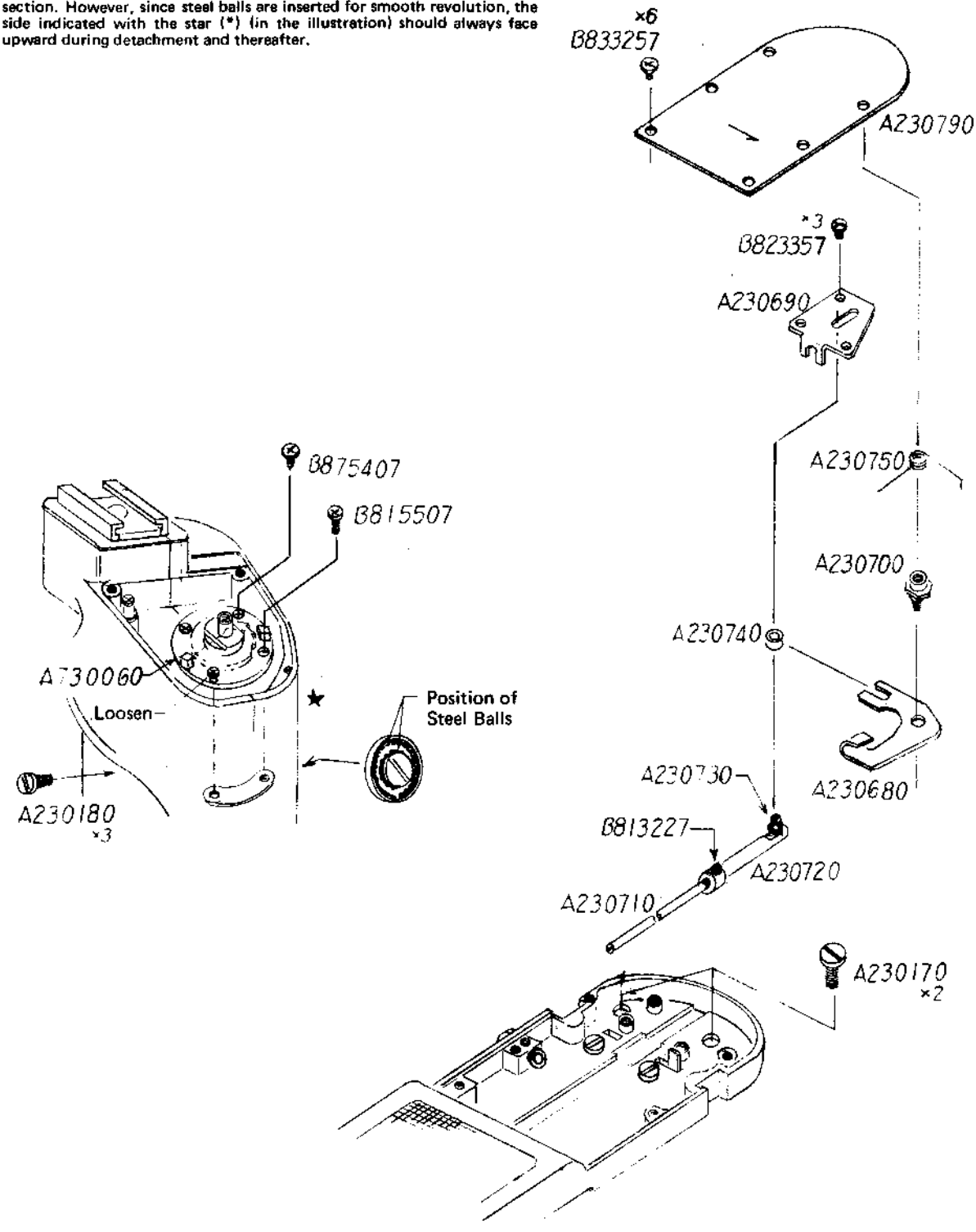


Fig. 2



4. Disassembling the Grip Section

1) Unscrew six B833257 screws and detach the bottom plate (A230790).
2) Unscrew three B823357 screws and detach the release pin guide (A230690).
3) Detach spring A230750, take out crank B shaft (A230700) and then take out the crank B (A230680).
4) Unscrew two A230170 screws.
5) Detach parts up to the winding wheel (A730050), as per instructions on page 1.
6) Of the four setscrews fixing the winding shaft holder base (A730060), unscrew two and loosen one.
7) Unscrewing the three A230180 screws will permit detachment of the grip section. However, since steel balls are inserted for smooth revolution, the side indicated with the star (*) (in the illustration) should always face upward during detachment and thereafter.



Zenza BRONICA ETR

PARTS LISTS & REPAIR MANUALS

ZENZA BRONICA IND., INC.

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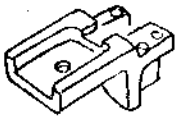
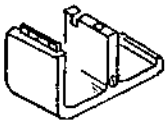
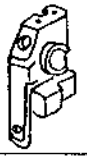
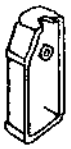
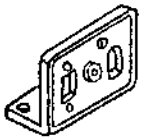
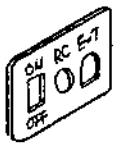
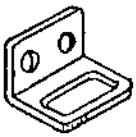
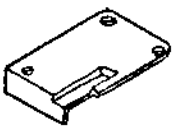
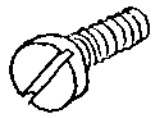
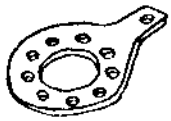
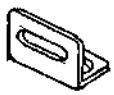
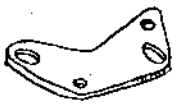
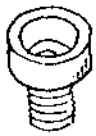
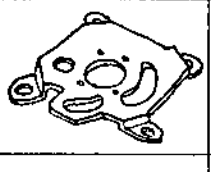
Parts List & Repair Manual

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-231011	Main M.D. M・D 本体		1				
1021	Battery box バッテリィボックス		1				
1031	Grift (left) グリップ(左)		1				
1041	Grip (right) グリップ(右)		1				
1060	Switch mounting plate スイッチ取付板		1				
1081	Switch nameplate スイッチ銘板		1				
1090	Strap metal ストラップ金具		2				
1100	Battery box fix plate バッテリィボックス固定板		2				
1152	Face plate 化粧板		1				
1161	Stopper ストッパ		1				
1171	Locking shaft 締付軸		1				

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-231181	Battery box cover fixing screw 電池蓋止ネジ		1				
1200	Battery box cover バッテリーボックス蓋		1				
1210	Locking lever 締付レバー		1				
1271	Release rod stopper レリーズ棒受		1				
1280	Release roller guide レリーズコロガイド		1				
1300	Damper plate 緩衝板		1				
1310	Damper member 緩衝体		1				
1320	Damper rubber 緩衝ゴム		1				
1330	Release rod レリーズ棒		1				
1340	Release rear rod レリーズ後棒		1				
1390	R. button base plate Rボタン地板		1				

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-231420	R button ring Rボタンリング		1				
1430	R. button ring stopper ボタンリング止		1				
1440	Release button Rボタン		1				
1450	R. button axis A Rボタン軸A		1				
1460	R. button axis B Rボタン軸B		1				
1470	Internal base plate 内地板		1				
1500	G2 base plate G2地板		1				
1510	G1 gear G1ギア		1				
1520	G2 small gear G2小ギア		1				
1530	G2 large gear G2大ギア		1				
1541	Spring bearing ring バネ受リング		1				

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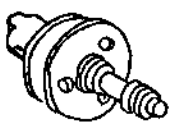
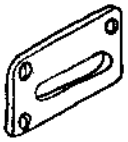
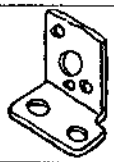
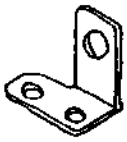
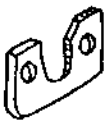
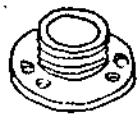
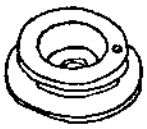
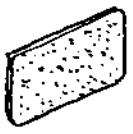
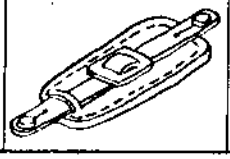
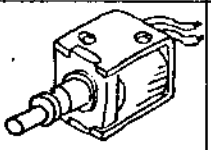
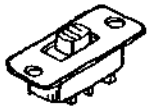
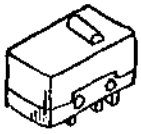
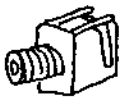
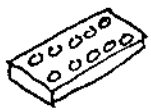
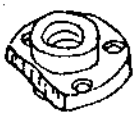
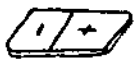
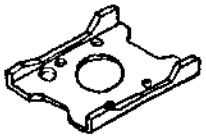
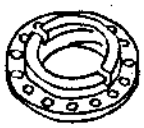
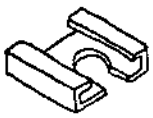
1-231601	G2 bearing G2軸受		2				
1611	G4 bearing G4軸受		2				
1620	Winding shaft ball bearing 巻上軸受		1				
1630	Winding gear 巻上歯車		1				
1641	Winding gear shaft 巻上ギア軸		1				
1651	Winding ratchet wheel 巻上爪車		1				
1661	Winding shaft nut (large) 巻上ナット大		1				
1671	Winding shaft nut (small) 巻上ナット小		1				
1680	Belleville spring ベルビルスプリング		2				
1691	Winding shaft 巻上軸		1				
1710	Wind stopper pawl 巻止爪		1				

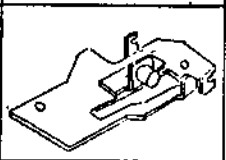
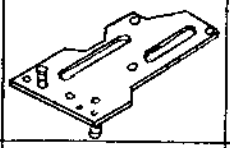
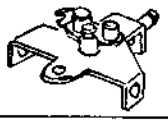
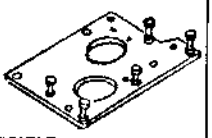
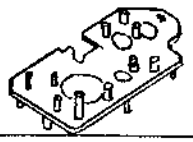
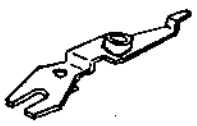
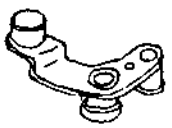
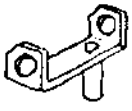
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-231720	Set cam セットカム		1				
1731	Coupler ring 継手輪		1				
1750	Winding eccentric collar 巻上偏心カラー		1				
1772	Coupler face ring 継手化粧輪		1				
1791	Set rod セット棒		1				
1820	Setting groove plate セット作動溝板		1				
1830	Solenoid guide holder ソレノイドガイド受		1				
1840	Set rod axis holder セット棒軸受		1				
1850	Solenoid stopper ソレノイド ストッパ°		1				
1-232030	Reset lever リセットレバー		1				
2051	Winding shaft bearing 巻上軸受		1				

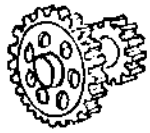
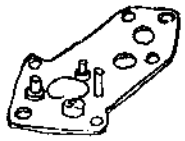
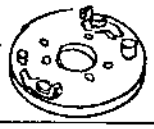
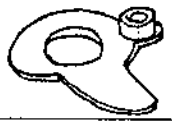
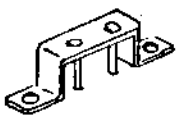
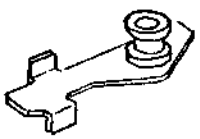
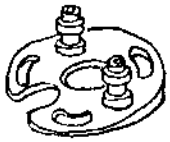
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-232061	Reset cam holder リセットカム押エ		1				
2072	Reset lever holder リセットレバー押エ		1				
2160	Circuit board collar 基板カラー		1				
2170	Shoe plate シュー台		1				
2180	Drive button 送りボタン		1				
2190	Drive button collar 送りボタンカラー		1				
2211	Release eccetric collar 解除偏心カラー		1				
2221	Grip leatherette グリップ皮		1				
2231	Front cover leatherette 前カバー皮		1				
2240	Bottom rubber 底ゴム		1				
2250	Hand strap ハンドストラップ		1				

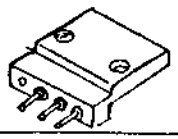
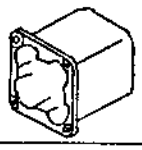
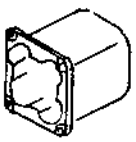
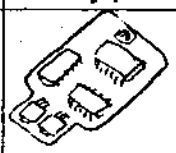
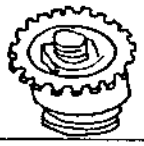
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-232280	Selftap screw セルフタップネジ		4				
2291	Face plate pillar 化粧板柱		1				
2300	Motor モーター		1				
2310	Solenoid ソレノイド		1				
2320	Power switch 電源スイッチ		1				
2330	Limit switch リミットスイッチ		3				
2360	EXT B. socket EXT. B ソケット		1				
2370	R.C. socket REMOTE ソケット		1				
2390	LED board LED 基板		1				
1-232740	Release rod spring holder レリーズ棒バネ受		1				
1-236160	Tripod screw socket 三脚ネジ受		1				

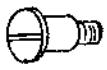
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-251460	M. arm screw (right) ミラーアーム止ネジ(右)		1				
5881	Wind stopper pawl spring 巻上爪バネ		2				
1-157500	Battery label 電池ラベル		8				
1-230040	Pressure plate 押板		1				
0051	Leaf spring 板バネ		2				
0060	Lock adjusting ring 回転子		1				
0080	Locking lever catch 巻上爪掛		2				
0091	Stopper plate ストッパ板		1				
0140	Stopper pin Upper ストッパピン上		2				
0150	Stopper pin lower ストッパピン下		2				
0180	Grip coupling screw 合セネジ		1				

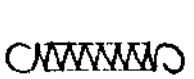
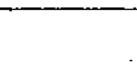
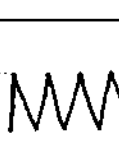
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-230190	Screw 回転ネジ		3				
0430	Crank catch 継手鉤A		1				
0460	Joint guide pin roller 継手ピンカラー		2				
0800	Shoe mount シュー座		1				
0810	Shoe base plate シュー化粧板		1				
0820	Shoe insulator plate シュー絶縁板		1				
0831	Shoe contact point シュー接点		1				
0876	Shoe insulator collar シュー絶縁カラー		1				
0881	Shoe lug plate シューラグ板		1				
0890	Shoe mount cover シュー蓋		1				
0160	Base plate stud 化粧板固定ピン		1				

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-731390	Release operating plate set リリーズ作動板セット		1				
1400	Release guide plate set リリーズガイド板セット		1				
1430	Release plate set リリーズ板セット		1				
1440	Release base plate set リリーズ地板セット		1				
1470	Medium base plate set 中地板セット		1				
1480	Set crank set セットクランクセット		1				
1490	M arm set Mアームセット		1				
1500	Y arm set Yアームセット		1				
1510	Operating element set 作動片セット		1				
1520	Release lever set 解除レバーセット		1				
1530	Set connecting plate set セット連結板セット		1				

Parts No. 部品番号	Name 名称	Shape 形状	Pcs.per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-73154C	G4 gear set G4ギアセット		1				
1550	G3 gear set G3ギアセット		1				
1560	Outer base plate set 外地板セット		1				
1570	Reverse ring set 逆転輪セット		1				
1590	Reset cam set リセットカムセット		1				
1610	Winding base plate set 捲止地板セット		1				
1620	Switch holder plate set スイッチ押え板セット		3				
1630	Winding stop lever set 捲止レバーセット		1				
1670	Winding ring set 捲上輪セット		1				

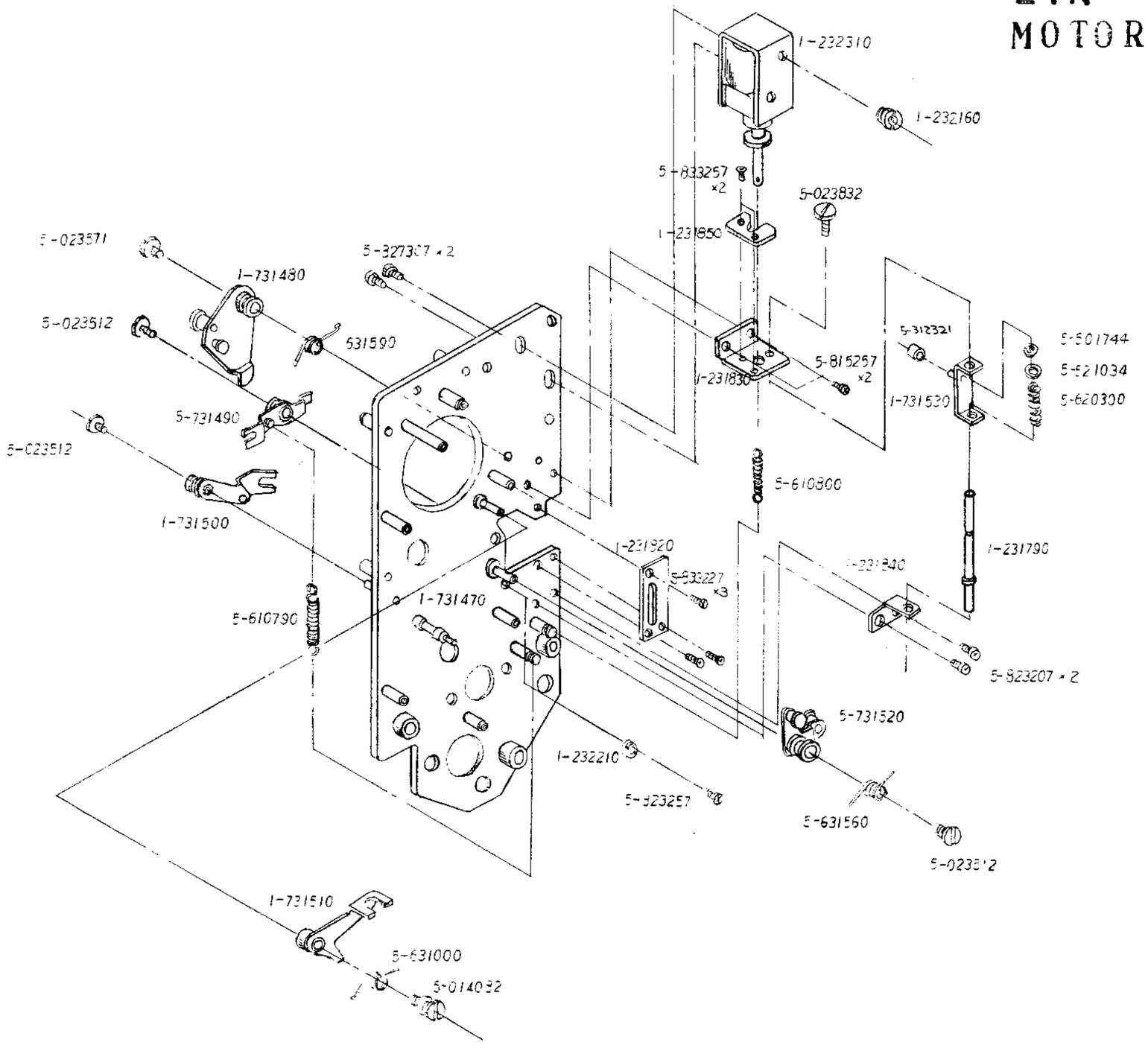
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
1-731340	Contact plate set 接点板セット		1				
1350	Battery case (left) バッテリーケース(左)		1				
1360	Battery case (right) バッテリーケース(右)		1				
1370	Battery cover set 電池蓋セット		1				
1-732340	LED set (red) LDEセット		1				
2350	LED set (green) LDEセット		1				
2404	MD printed circuit board MD基板		1				
1-731650	Winding gear set 巻上歯車セット		1				

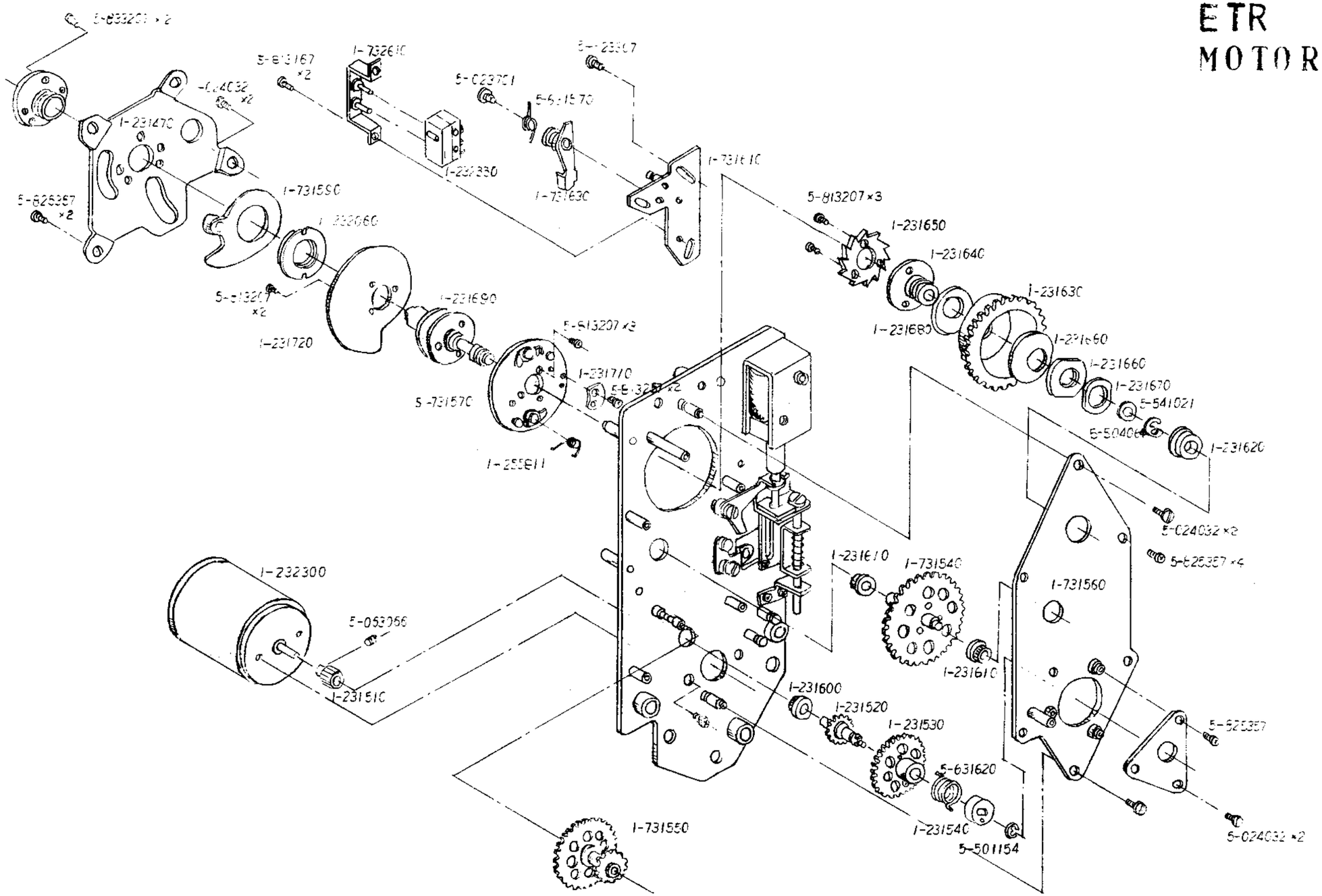
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
5-013151	Operating plate stopper 作動板止メ		2				
014082	Operating element stopper 作動片止メ						
014107	Grip stopper グリップ°止メ						
023832	Set rod fixing screw セット棒止メネジ						
024236	Coupler ring stopper 継ぎ輪止メ						
063066	M1.7 set screw M1.7セットビス						
311631	Guide roller ガイドコロ						
312321	Set operation roller セット作動コロ						
312351	Operating plate roller 作動板コロ		2				
326022	Widing axis collar 巻上軸カラー						
460017	Fixing nut 固定ナット						

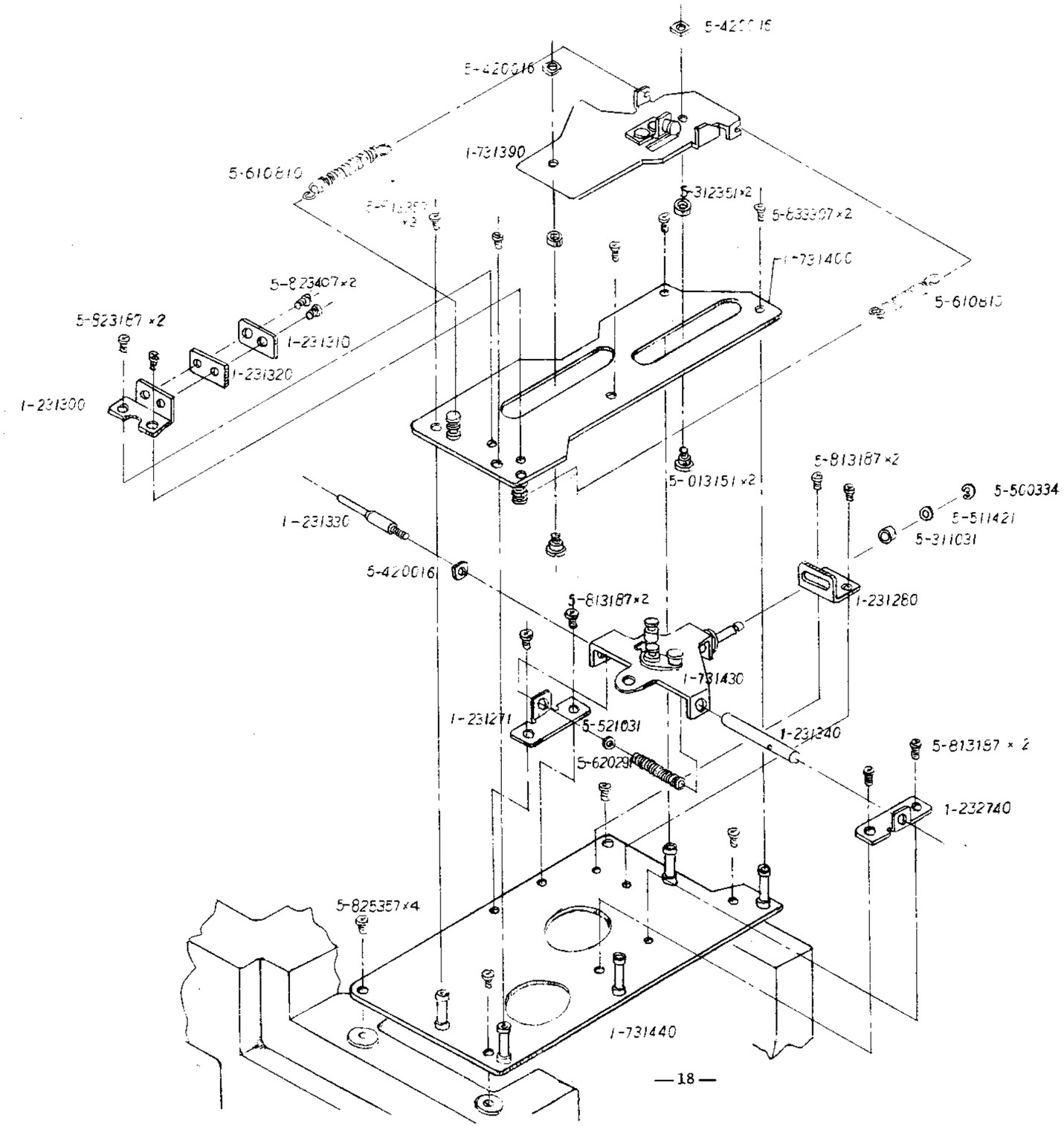
Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
5-504064	E ring (E-32) Eリング(E-32)		1				
504164	Spring washer スプリングワッシャ		3				
541021	Winding axis washer 巻上軸座金		1				
610790	M arm spring Mアームバネ		1				
610800	Solenoid spring ソレノイドバネ		1				
610810	Operating plate spring 作動板バネ		2				
620290	Release rod spring レリーズ棒バネ		1				
620300	Solenoid set spring ソレノイドセットバネ		1				
620310	Release spring A レリーズバネA		1				
620320	Release spring B レリーズバネB		1				
631560	Release arm spring 解除アームバネ		1				

Parts No. 部品番号	Name 名称	Shape 形状	Pcs per Unit 個数	Page 頁	Ass'y No. 組立番号	Price 単価	Remarks 備考
5-631570	Winding spring 巻上用バネ						
631580	Release plate spring レリーズ板バネ						
631590	Set crank spring セットクランク用バネ						
631600	Operating element spring 作動片バネ						
631610	Reset spring リセットバネ						
631620	Damper spring 緩衝バネ						
620010	Spring スプリング						

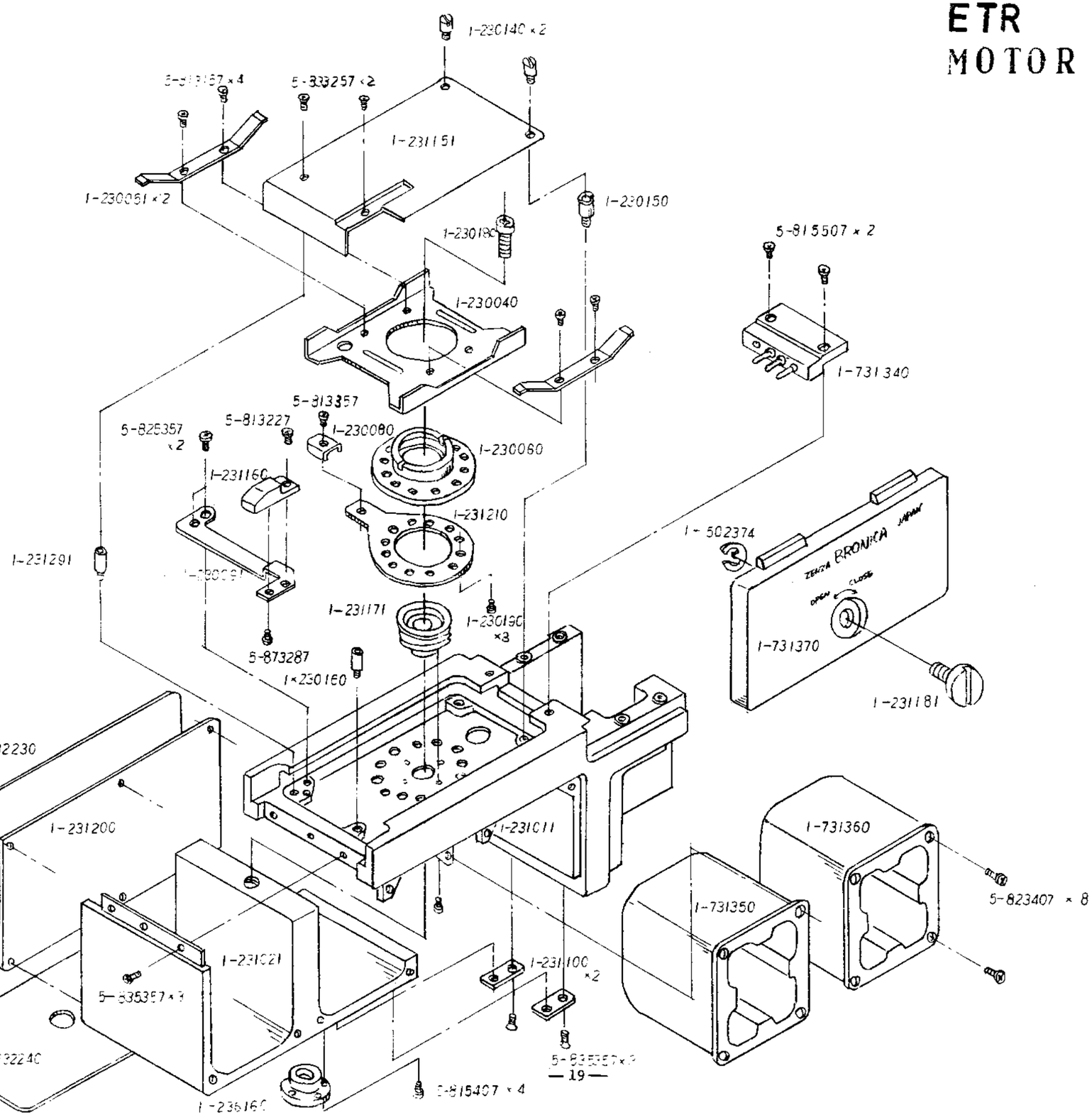
ETR
MOTOR DRIVE



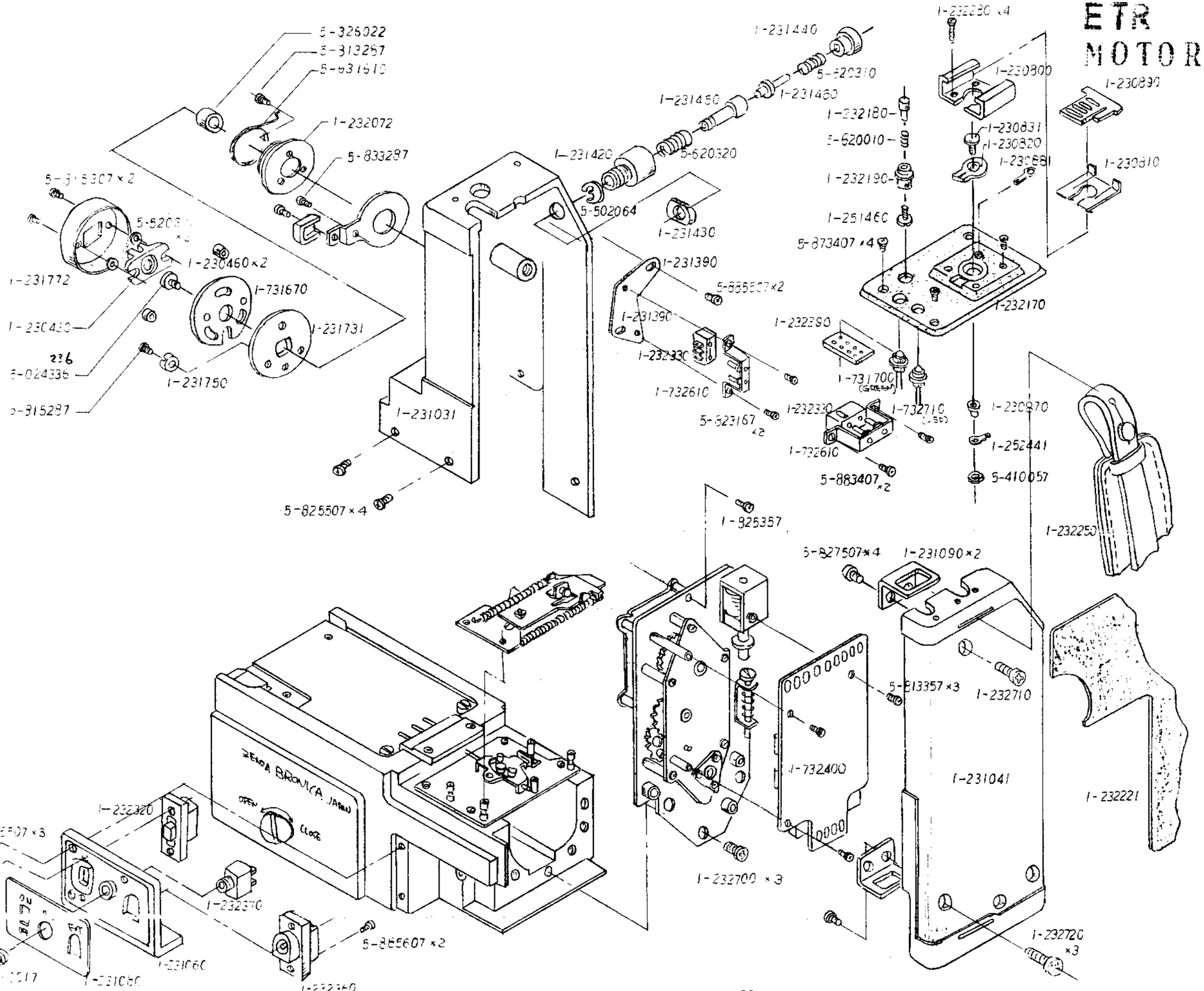

5-833201 ×2
5-813167 ×2
1-732610
5-024032 ×2
1-231470
5-826357 ×2
1-731550
1-232060
5-813207 ×2
1-231720
1-231690
5-813207 ×3
1-231710
5-731570
1-255811
5-813207 ×3
1-231650
1-231640
1-231630
1-231680
1-231660
1-231670
5-541021
5-504064
1-231620
1-731610
5-024032 ×2
5-826357 ×4
1-731560
1-232300
5-053066
1-231510
1-231610
1-731540
1-231600
1-231520
1-231530
5-631620
1-231540
5-501154
1-731550
5-826357
5-024032 ×2


5-420016
5-420016
1-731390
5-610810
5-312351×2
5-833307×2
1-731400
5-823407×2
5-923187×2
1-231310
1-231320
1-231300
5-610810
5-013151×2
5-813187×2
5-500334
5-511421
5-311031
1-231330
5-420016
1-231280
5-813187×2
1-731430
1-231271
5-521031
1-231240
5-813187×2
5-620291
1-232740
5-825357×4
1-731440

ETR
MOTOR DRIVE

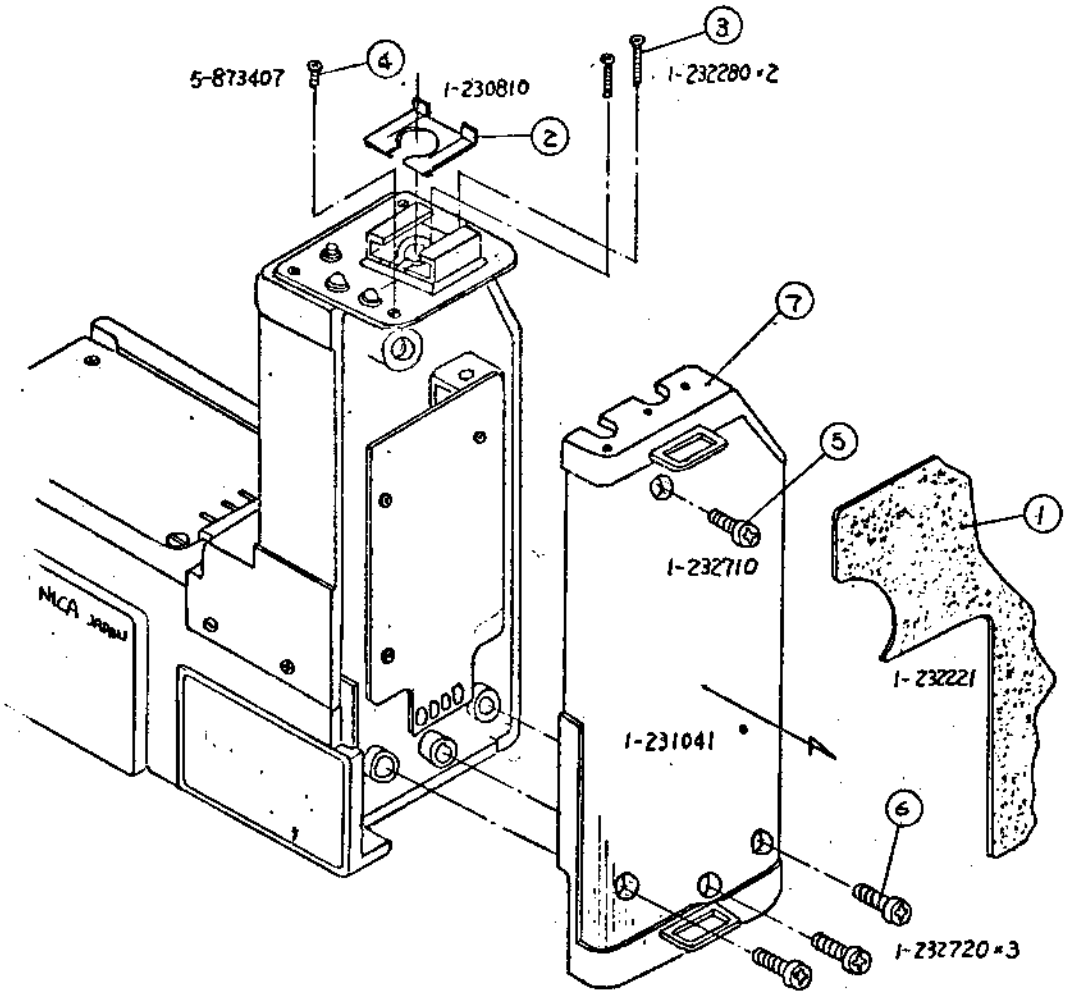


ETR
MOTOR DRIVE



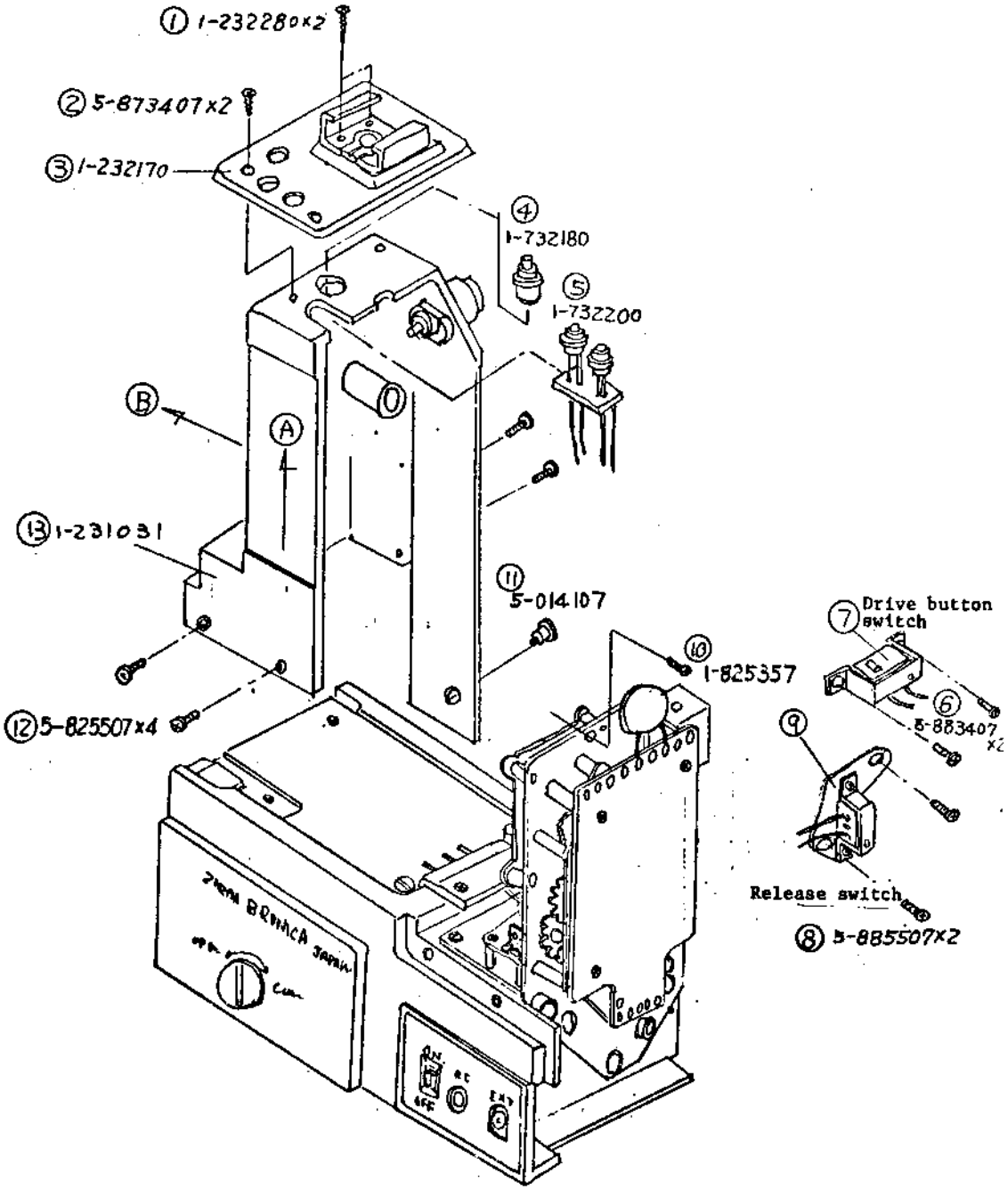
HOW TO REMOVE THE GRIP RIGHT (1-232710)

Peel off the grip leather ① (1-232221). Remove the shoe face plate ② (1-232810), and then remove two screws, ③ (self tap screw, 1-232280), and one self tap screw ④ (5-873407). Refer to the following diagram for position. Remove a screw ⑤ (M4 screw 1-232710) at the right side of grip and 3 screws ⑥ (M4 screw 1-232720), and then remove the grip right ⑦ (1-231041) in the direction of an arrow. Use a Philips type screw driver of No. 2 for screws ⑤ and ⑥.



HOW TO REMOVE THE GRIP LEFT (1-231031)

Remove 2 selftap screws ① (1-232280), and 1 selftap screw ② (5-873407), and the shoe base ③ (1-232170). The drive button set ④ (1-732180), and LED set ⑤ (1-732200) can be detached. Remove two selftap screws ⑥ (5-883407) and ⑦ . Remove ② selftap screws ⑧ (5-885507) and ⑨. Remove 1 M2 screw ⑩ (1-825357). Remove the screw ⑪ (5-014107) at the front of grip left with a minus screw driver, and remove 4 M2 screws ⑫ (5-825507) at the front and rear of grip. As to the above, refer to the following diagram. Raise the grip left ⑬ (1-231031) in the direction of arrow Ⓐ and then remove it in the direction of arrow Ⓑ.



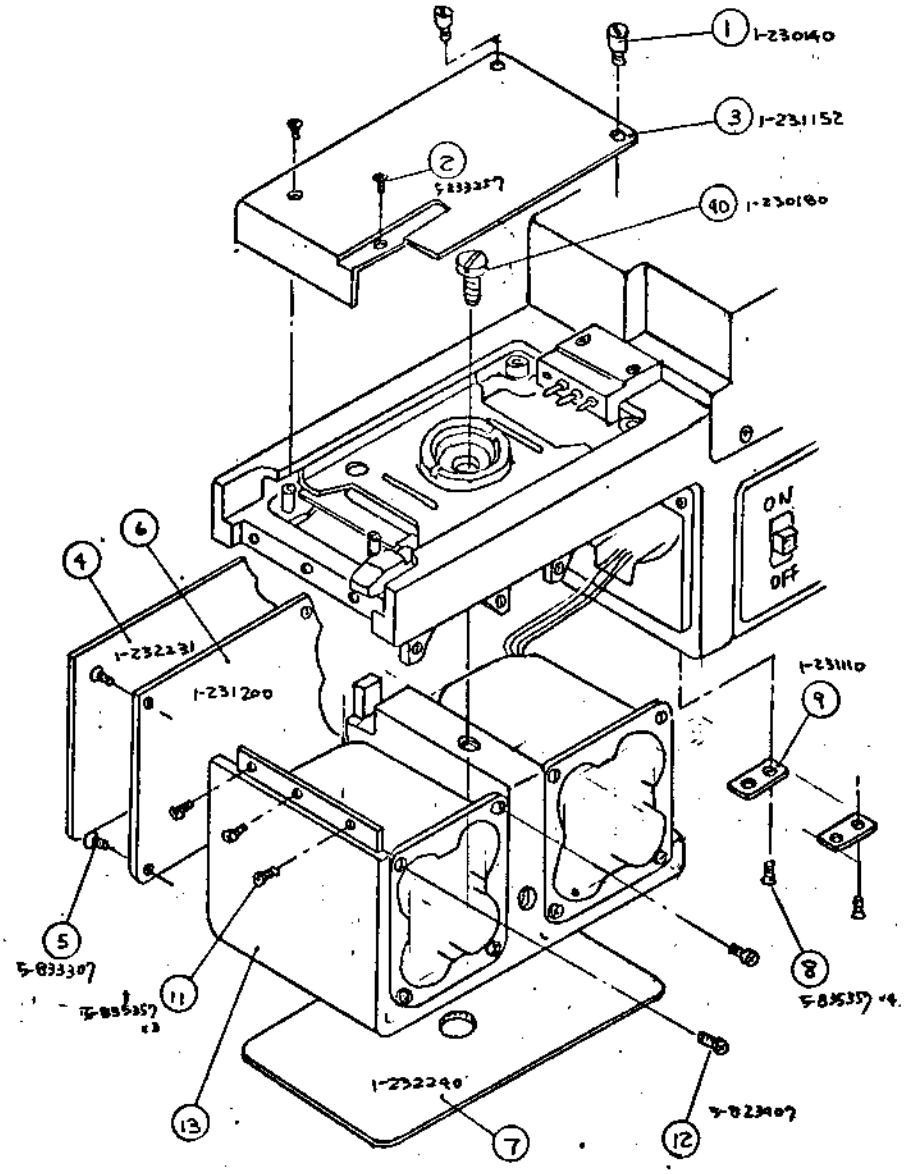
HOW TO REMOVE THE BATTERY BOX

1. Remove 2 screws ② (5-833257), and 2 stopper pins ① (1-230140), and remove the face plate ③ (1-231152).

2. Peel off the front cover leatherette ④ (1-232231), and remove 6 screws 5 (5-833307) and then remove the battery box cover ⑥ (1-232200).

3. Remove the bottom rubber ⑦ (1-232240) and a screw ⑧ (5-835357), and then remove the battery box fixing plate ⑨ (1-231110).

4. Remove 3 screws ⑩, ⑪ and 4 screws ⑫, and remove the battery box ⑬ pulling it downward.



THE RESET LEVER IS NOT PROPERLY RETURNED. (HOW TO REMOVE THE RESET LEVER)

1. Remove 2 screws ① (5-815307), and then remove the coupler face ring ② (1-231772), washer ③ (5-520631), coupler wheel ④ (1-230430) and coupler pin collar ⑤ (1-230460) in order.

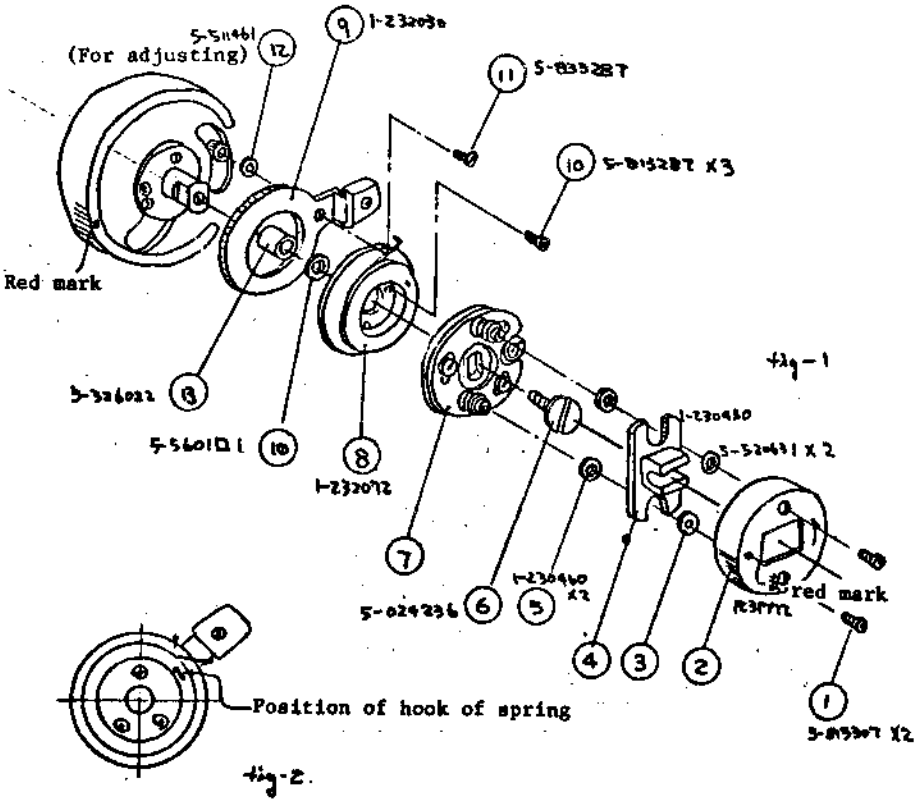
2. Remove the screw ⑥ (coupler wheel stopper 5-024236), washer ⑦ and ⑩ (5-560101), and winding axis collar ⑪ (5-326022).

3. Remove a screw ⑩ and reset lever holder ⑧ (1-232072) with spring attached.

4. Remove a screw ⑪ and detach reset lever ⑨ (1-232030).

5. In case the reset lever cannot be smoothly returned due to the narrow gap of the base plate, insert an adjusting washer ⑫ (5-511461) at the position of Fig. 1 and install ⑨.

6. In assembling, wind the spring ⑧ up to such a degree that the position of hook is set at the position shown in Fig. 2. In installing ②, it should be adjusted to the red mark at the position where the set cam fell.



ADJUSTING METHOD OF THE POSITION OF WIND STOP SWITCH (1)

ADJUSTING OF POSITION AT WIND WHEEL SIDE

1. In case the wind wheel cannot be returned upon completion of winding, or the wind wheel is stopped at the overload position due to no reversing of wheel. (the wind stop pawl at the camera side is not released.) The reason is that the wind stop switch is released too early.

1-1 Remove (1) through (5) at the wind wheel side.

1-2 Loosen 3 screws (7) (5-826307), and (8), and rotate the wind wheel (9) (1-731670) counterclockwise (in the direction of A, slower side, in Fig. 1) against the coupler ring (10) (1-231731) by means of the wind eccentric collar (6) (1-231750). Upon completion of adjustment, apply screw-lock to screw (7) and (8) (4 places).

1-3 In installing the wind face firng (2) (1-231772), adjust the red mark to the position where the wind stop switch falls.

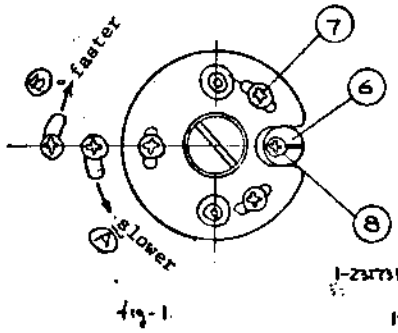


fig-1

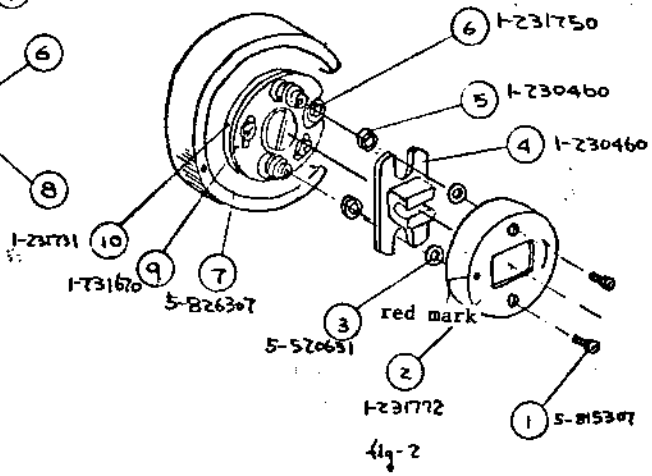


fig-2

2. In case the returning motion of the wind wheel is strong at the completion of winding, or the wheel is stopped due to overload. The reason is that the wind stop switch is released immediately before or after the wind stop position.

2-1 Remove (1) through (5) at the wind wheel side.

2-2 Loosen (7) and (8), and rotate (9) clockwise against (10) (in the direction of (B), faster side) by means of (6). Upon completion of adjustment, tighten (7) and (8) with screw lock.

3. Confirmation of adjustment

Adjustment is properly accomplished if the wind wheel is reversed slightly after MD has been once operated for winding using 7V external power source.

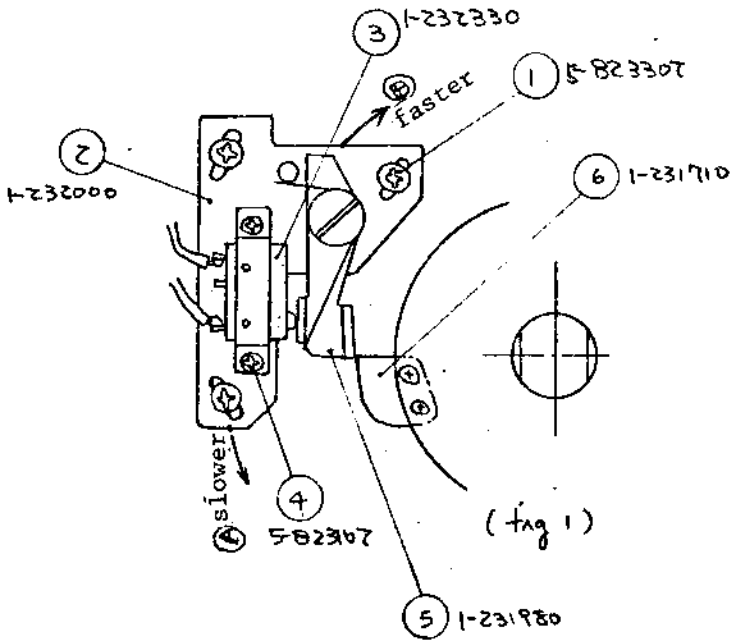
ADJUSTING METHOD OF THE POSITION OF WIND STOP SWITCH (2)

Adjusting of position at wind stop switch base plate side (This adjustment is to be performed when the amount of adjustment at the wind wheel side is inadequate.)

1. Remove the grip right and grip left.

2. Loosen 3 screws (1) (5-823307), and make adjustment by deviating the wind stop base plate (1-232000). Move (2) further in the direction of (Ⓐ) (Fig. 1) in case the amount of adjustment in the direction of (A) is inadequate at the wind wheel side. Move 2 further in the direction (Ⓑ) in case (B) is inadequate.

3. Upon completion of adjustment of 2, confirm that the switch (3) is not pushed by undue force when (6) pushes (5), and the switch element is securely pressed. If the switch (3) is pushed by undue force, adjust the position of switch 3 by means of screw (4) or (1).



(fig 1)

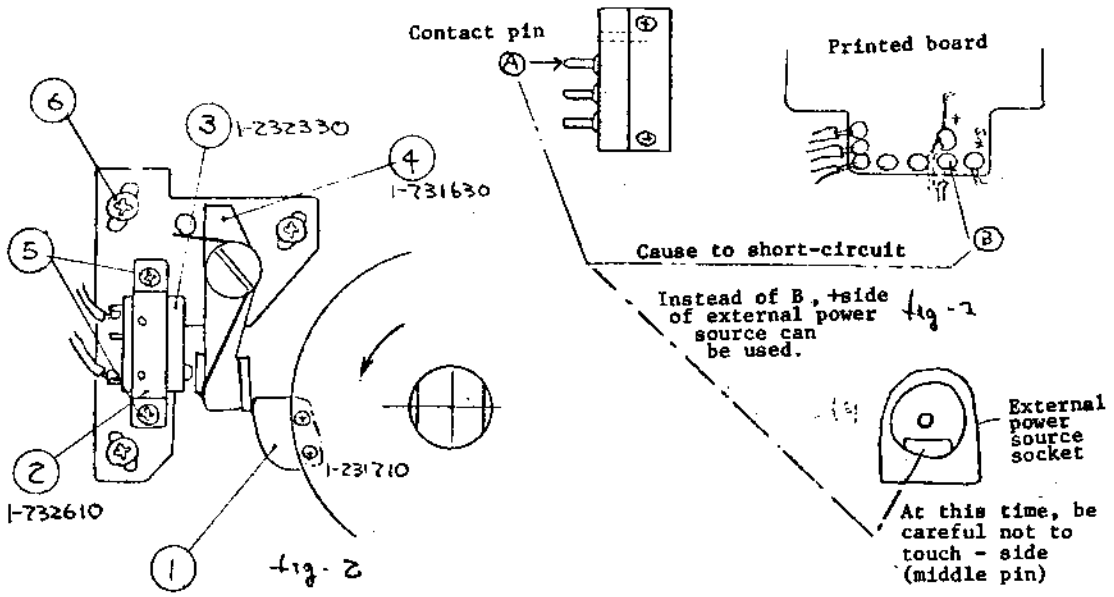
THE SHUTTER IS RELEASED WHEN THE RELEASE BUTTON IS PUSHED BUT THE WIND WHEEL IS STOPPED AT OVERLOAD POSITION UPON COMPLETION OF WINDING

1. When the coupler wheel fail to stop after making one turn as the contact pin is short-circuit with the base plate at + side. Remove the grip right and causes Ⓐ and Ⓑ shown in Fig. 1 to short-circuit. When external power source is used, touch A with a finger.

1-1 Remove the grip right and grip left.

1-2 Check whether the microswitch ③ (1-232330), is operated or not when the wind stop pawl ① (1-231710) pushes the wind stop lever ④ (1-731630) to its extreme position after the wind axis has been rotated. If it is not pushed, adjust the position of the switch by means of a screw 5. In this case, ④ should not push ③ with undue force (Fig. 2). The motor should stop when the switch ③ is once pushed and then released.

1-3 After 1-2 adjustment, if the motor fail to stop even if the contact pin and base plate (printed board) at ⊕ side are caused to short-circuit, check wirings and printed board. (refer to the section of electric components)



2. The coupler wheel stops after making one turn when the contact pin is caused to short-circuit with ⊕ side of the printed board.

2-1 Timing of the wind stop switch ④ is slow. As to its adjustment, refer to the adjustment of wind stop switch.

ADJUSTING METHOD OF STROKE OF RELEASE ROD

1. Adjustment of the protruding amount of release rod.

1-1 Remove the grip right and grip left.

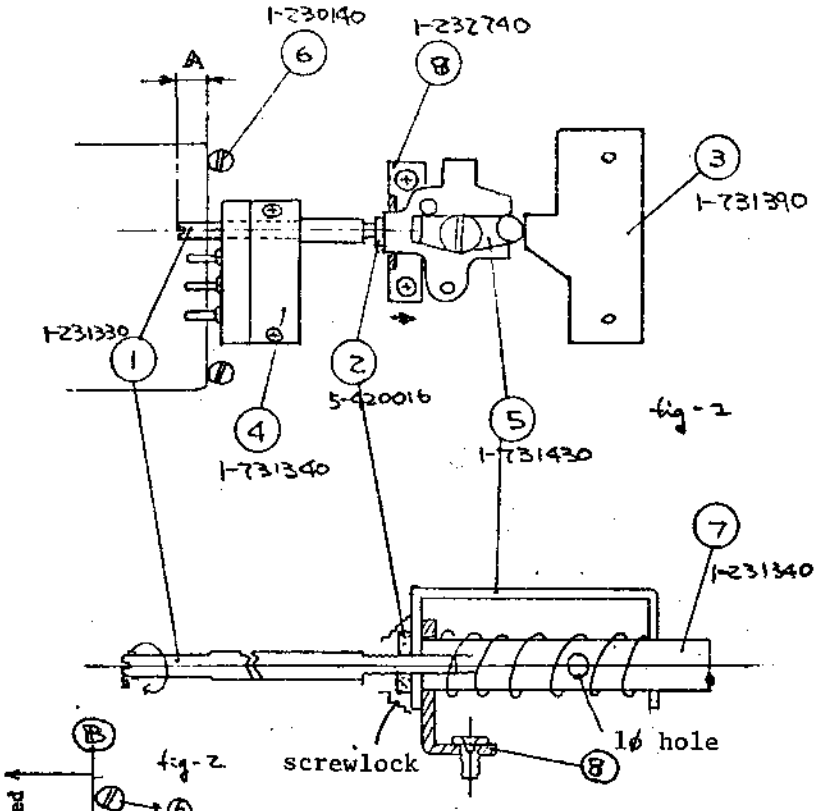
1-2 Fix the release rear rod ⑦ (1-231340), and loosen the M17 nut ② (5-420016). The rear rod ⑦ is fixed by using 1ϕ hole. (Fig. 2)

1-3 When the protruding amount of ① is small, rotate the slot of ① clockwise, and when it is large, rotate it counterclockwise. At this time, ⑦ should be kept fixed. (1 moves 0.35mm by a turn.) After adjustment, tighten nuts ② and ⑦ securely and apply screwlock.

1-4 Ⓐshould be adjusted to about 2.5mm when the release operating plate ③ (1-731390) is at the position shown in Fig. 1.

2. Adjustment of retired position of release rod

2-1 When the position of release rod is protruded than the line Ⓑ(Fig. 3), move the release rod spring holder ⑧ (1-232740) in the direction of arrow (refer to Fig. 1). It should not be protruded outside line Ⓑ.



THE SHUTTER IS NOT RELEASED ON CAMERA SIDE WHEN THE RELEASE BUTTON IS PUSHED

1. In case the red LED is lighted (for about 0.2 sec.) but the release pin is not caused to operate when the release button is pushed by MD single unit (after alined red marks).

1-1 Remove the grip right, and remove the screws, M 1.7, of the circuit printed board.

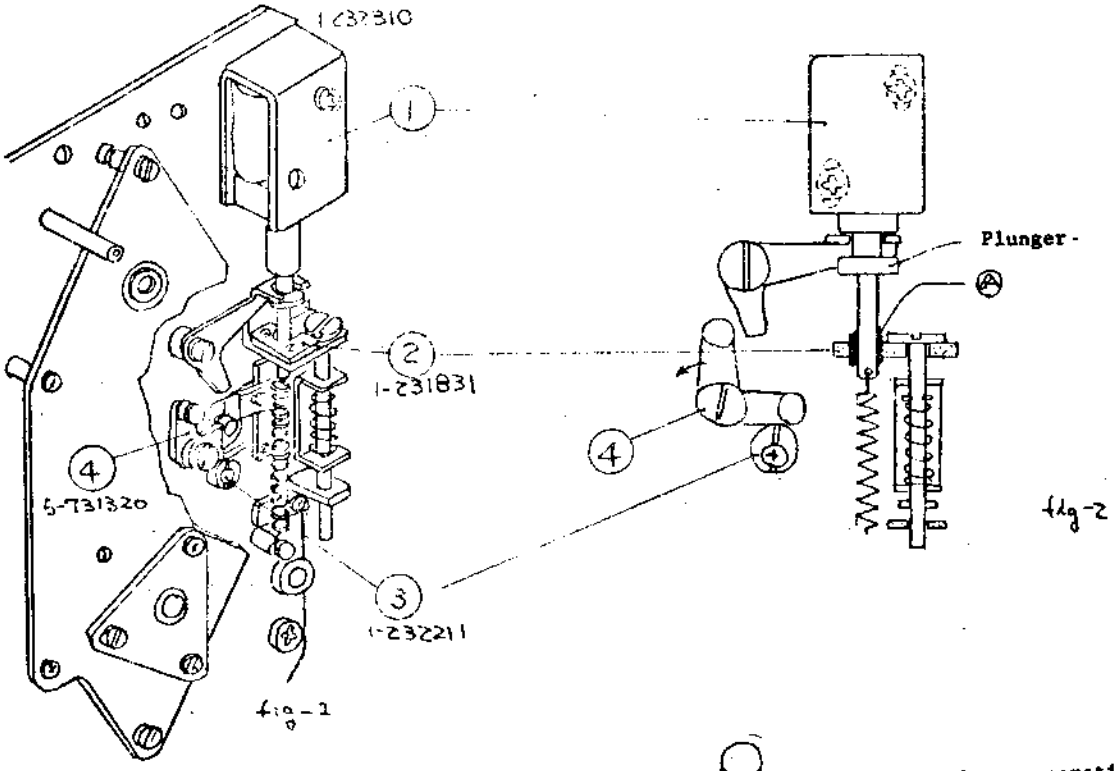
1-2 Remove the release arm ④ (5-731320), in the direction of arrow, check the movement of solenoid axis ① (1-232310) with the release operating plate kept in disengaged condition. It is in good condition if the plunger which is attracted by a magnetic screw driver temporarily, is released by the force of a spring when the release button is pushed. If it is not released, check the portion of Ⓐ for sliding condition (Fig. 2).

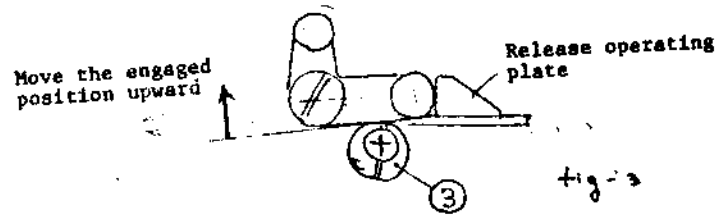
1-3 When the plunger is found to be smooth in sliding, move the position of ④ in the direction of arrow (Fig. 3) by loosening the screw of release eccentric collar ③ (1-232211). At this time, the amount of adjustment of ③ should be kept minimum at which the release operating plate can be released by the solenoid spring. (Be sure to confirm that release operating plate can be set by ④.)

1-4 If the solenoid is not released by the test of Par. 1-2, check ① for broken wire or short-circuit. (Refer to the section of electric circuits.)

2. When the red LED is not lighted as the release button is pressed.

2-1 Check printed board and LED, etc. (Refer to the section of electric circuits.)





THE OPERATION OF MD SIDE CANNOT BE STOPPED EVEN IF FINGER IS FREED FROM THE RELEASE BUTTON (SINGLE FRAME PICTURE TAKING CANNOT BE MADE.)

1. In case the release operating plate cannot be set even if the reset lever has been set. (The release pin is protruded as the reset lever is moved back.)

1-1 Remove the grip right.

1-2 Aline the wind wheel to the red mark. (At the position where the set cam falls.)

1-3 Set the plunger of solenoid ① (1-232310) by pushing it inward with a screw driver.

1-4 Under the condition of 1-3, check the engaged amount of the release arm ② (5-731230), and release operating plate ③ (1-731390). If ③ is not engaged with 2 when the reset lever is set, increase the amount of engagement by moving the position of release eccentric collar ④ (1-232211) in the direction of arrow. (Fig. 1)

1-5 Set the set cam ⑧ (1-231720) at the position where it pushes up the set crank ⑦ (1-731480) at its uppermost position. (Fig. 2)

1-6 At this time, adjust the position of ① so as to obtain a gap of 1 to 1.2mm of solenoid set rod ⑥ (1-231792). In case this gap is absent, the release operating plate is released immediately after winding has been completed since the setting of solenoid is not properly performed by the rotation of the wind wheel. (Fig. 1)

1-7 The position of solenoid can be adjusted by means of screw ⑤ after removing grip left and the wind stop switch base plate.

2. In case the release operating plate is not set as the reset lever is set.

2-1 When the release operating plate is set with the power switch kept off, and it is not set when the switch is on, check the solenoid for its wirings and printed board. (Refer to the section of electric circuits.)

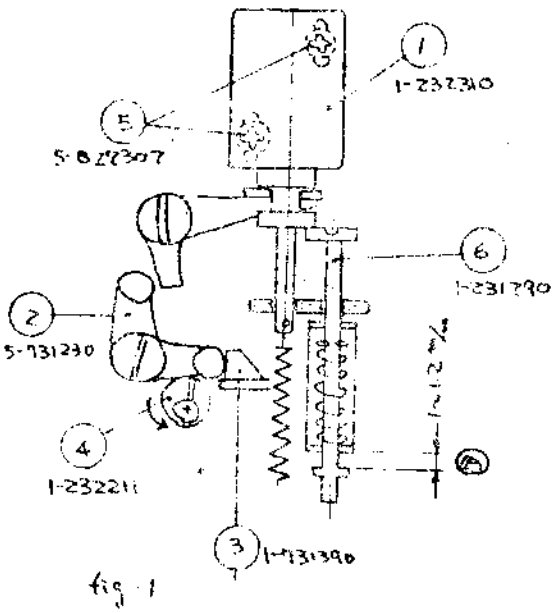


fig-1

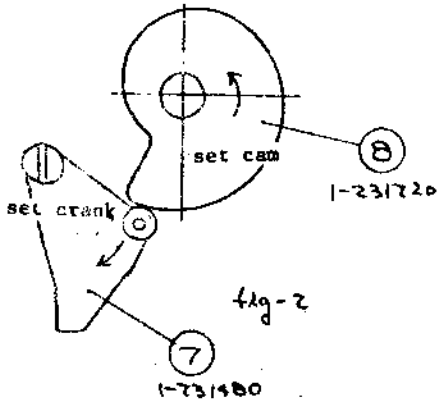


fig-2

MOTOR DOES NOT STOP WITH AN OVERLOAD APPLIED. (IN DRIVING FILM, THE MOTOR DOESN'T STOP EVEN IF THE FIRST FRAME IS FED.)

1. Remove the grip right, grip left and printed board.

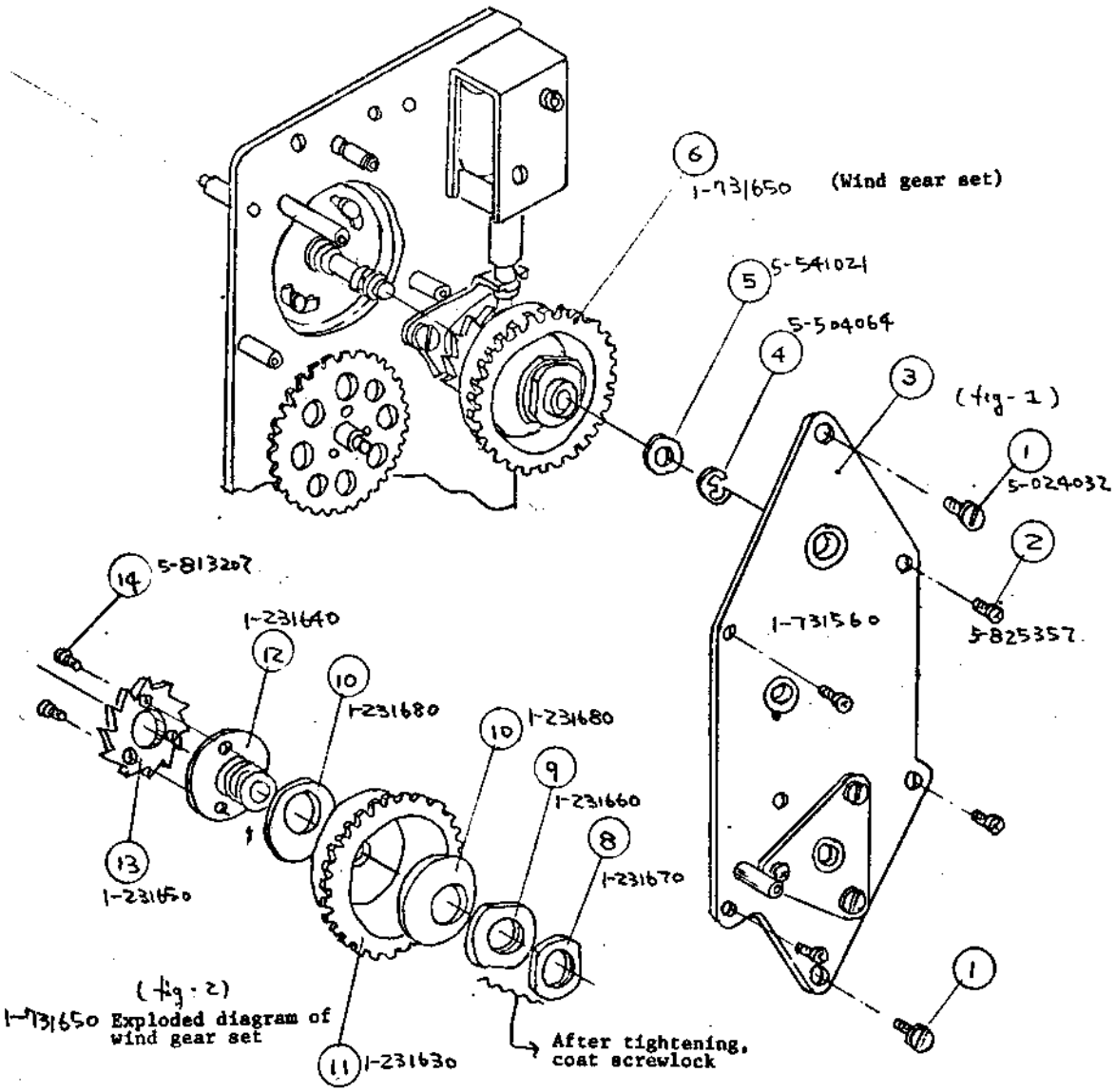
2. Remove 2 screws ① (5-024032) and 4 screws ② (5-825357) and then remove the outer base plate ③ (1-731560).

3. Remove E ring of the wind axis ④ (5-504064) and pull out the wind gear set ⑥ (1-731650).

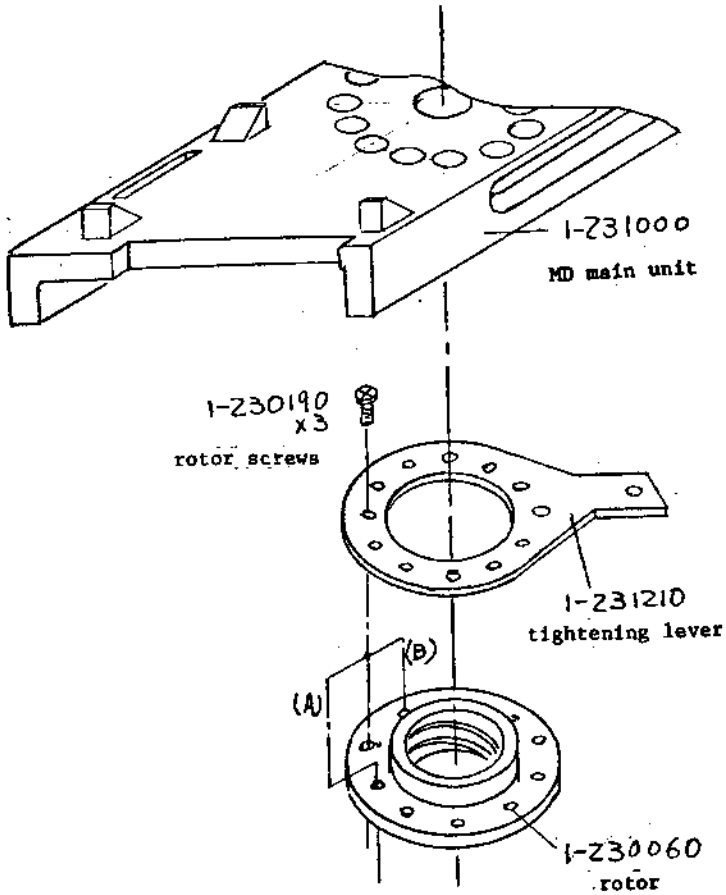
3-1 When built-in jigs are used for the wind gear set (Fig. 2)
In Fig. 2, remove a winding small nut ⑧ (1-231670) tighten the large winding nut ⑨ (1-231660) so as to cause the wind gear ⑪ (1-231630) to slide at a pressure of 18 to 21 kg·cm when the wind pawl ⑬ (1-231650) is fixed. Tighten ⑧ with ⑨ held in position, and then fix ⑧ and ⑨. Be sure to coat screwlock at nuts.

3-2 No jigs are available.
Replace ⑥.

4. In assembling this parts, coat grease containing MoS_2 to the gear teeth of new gear wheel.



ADJUSTING METHOD OF TIGHTENING OF CAMERA MOUNTING UNIT

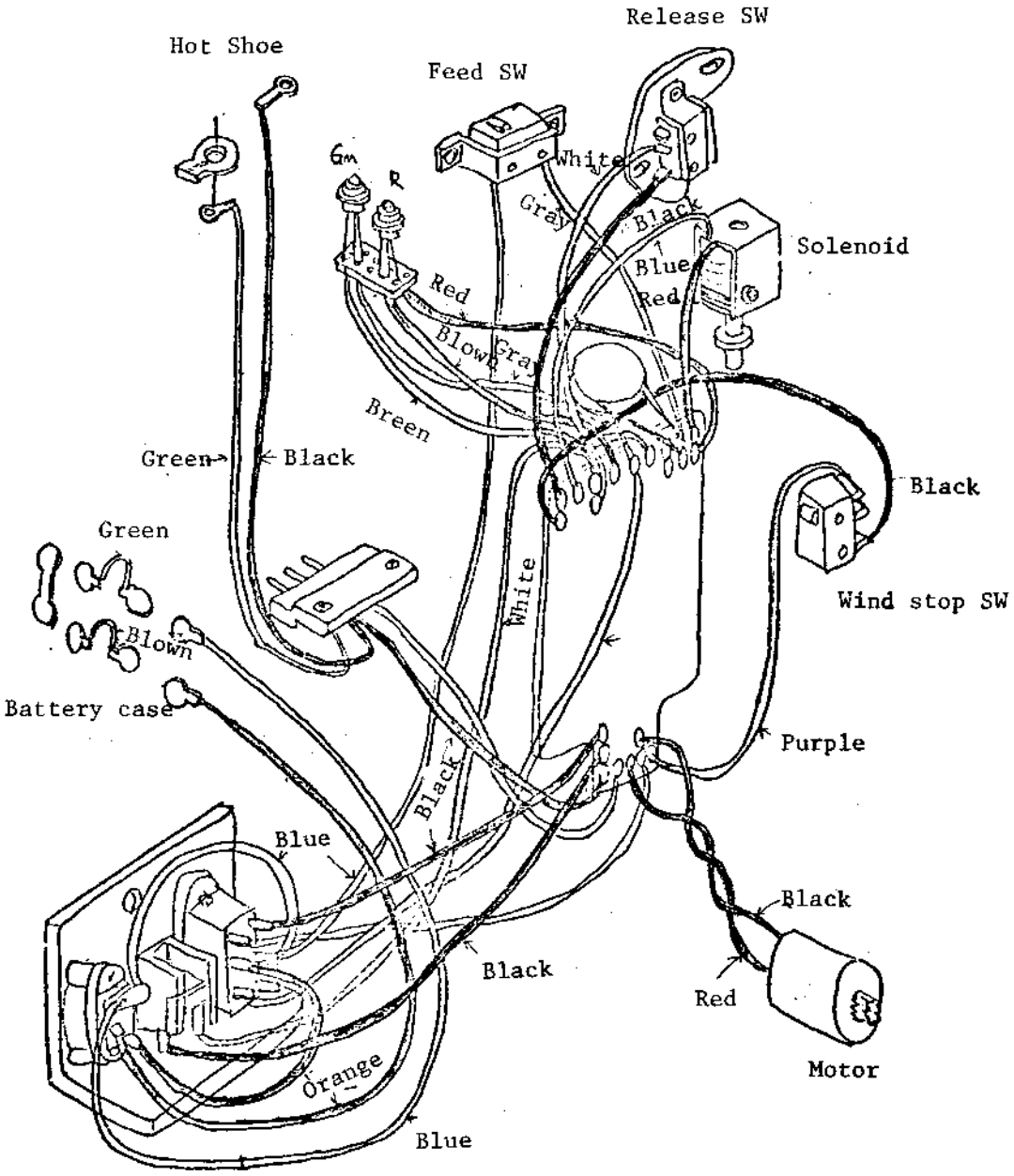


1) Remove battery box side (Refer to a separate diagram.)

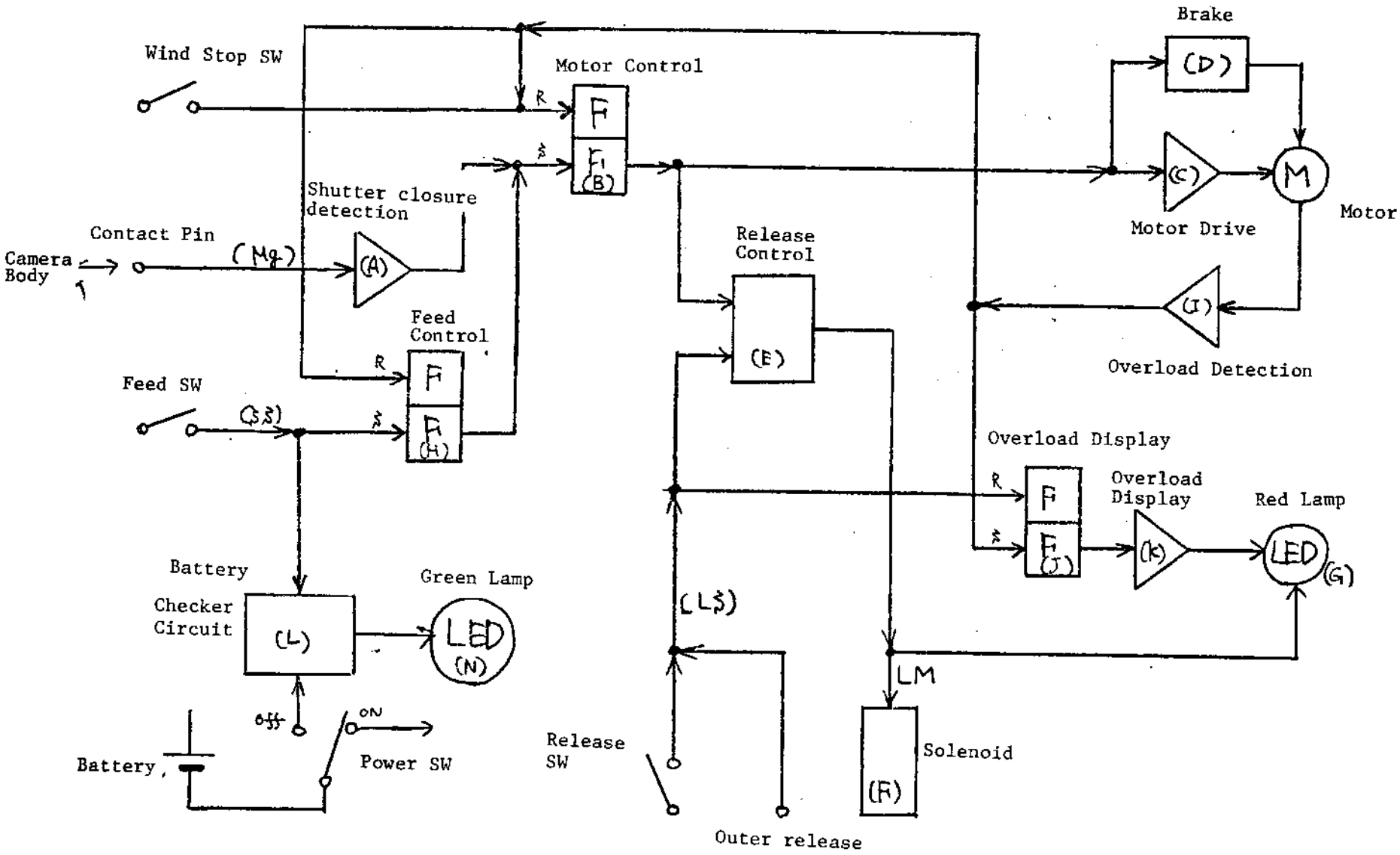
2) Slide the tightening lever (1-231210) so as to have 3 rotor screws (1-230190) seen through those of 12 holes of the MD main unit, (1-231000).

3) Remove the rotor screws by inserting a screw driver through the hole of MD, and make adjustment by changing the position of holes of rotor (1-230060) in relation to the tightening lever. The degree of tightening becomes stronger as the position of hole is shifted in the direction of A side as shown in the above diagram. It becomes weaker in sequence as the lever is moved in the direction of(B) side.

4) Insert a tripod shoe of ETR camera and see how tight it is. If tightening is weak, make adjustment by moving a tightening hole in the direction of (A) side by using a pincettes after removing rotor screws. Tighten rotor screws with care as they are self-tap screws.


Release SW
Hot Shoe
Feed SW
Gm
R
White
Gray
Black
Solenoid
Blue
Red
Red
Blown
Gray
Breen
Green
Black
Black
Green
White
Wind stop SW
Blown
Battery case
Purple
Black
Blue
Black
Black
Red
Motor
Orange
Blue

MD Block Diagram



Control Circuit of MD

(Theory)

The time at which an ETR camera equipped with MD film is desired to be at such a time immediately after the shutter has been closed. As the lens shutter is closed, the power source of the ETR camera is turned OFF.

A signal generated by the turn OFF of power source is transmitted to its MD through a contact point pin, and is used as a timining signal to cause the wind motor to become ON.

The ETR camera does not generate a signal informing the completion of winding operation.

However, a winding of film is accomplished by a full turn of the crank wheel. Consequently, it is designed to stop the motor by detecting a point where the crank wheel completes a full turn at the MD side.

The shutter is released by the release pin which is pushed by the spring which has been set simultaneously at the time of film winding.

F.F. Circuit

Upon receiving a signal from the camera informing the closure of shutter, MD causes the motor to become ON and then to become OFF after the wind wheel makes a full turn. Therefore, MD is required to keep the motor ON for a certain period of time from it is turned ON until it become OFF. For this purpose, MD utilizes a flip-flop circuit (FF circuit).

The FF circuit is reset as R input enters, and Q becomes low level and $\overline{Q}$ becomes high, and then Q becomes high level and $\overline{Q}$ becomes low level when S input enters.

In addition to ON and OFF control of the motor, the FF circuit is also used to maintain film driving condition when the drive switch is pushed and also keep the overload lamp ON.

Description of Operation of Circuit

A signal informing the closure of sector of shutter from terminal (Mg), enters the shutter closure detection detection circuit (A),through contact point PIN. Upon detecting the closure of shutter the detection circuit (A) sets the motor control FF circuit B causing the motor drive circuit (C) to become ON and the motor starts to operate.

As the wind wheel makes a full turn by the rotation of motor (immediately before the red mark of coupler wheel is alined), the wind stop switch is turned ON (at the time when the knob of switch is protruded, other switches are ON with their knobs recede.) and FF(B) is reset.

By the reset of (B), the motor drive circuit (C) is turned OFF causing the brake circuit to become ON and motor will be stopped with brake applied.

The release control circuit (E) causes a current to flow through the solenoid (F) and the red (G) for about 0.2 second when the release switch is turned ON with FF(B) kept reset, or when FF(B) is reset with the release switch is kept ON. The solenoid (F) keeps to attract the plunger with its built-in permanent magnet.

As the magnetic force of the permanent magnet is negated when a current flows through the solenoid, the plunger is pulled out by the force of a spring.

By the action of plunger, the pawl of a spring which pushes out the release pin is released.

MD has a driving mechanism for driving the leader tape portion of a roll of film.

As the drive switch is turned ON, the drive control FF(H) is set and then the motor feed control FF(B) is set. In Other words, the motor is turned ON.

The wind stop switch which is turned ON by a full turn of the wind wheel attempts to reset FF(B), but a signal from the wind stop switch is disregarded by FF(B) which is supplied with the output of FF(H).

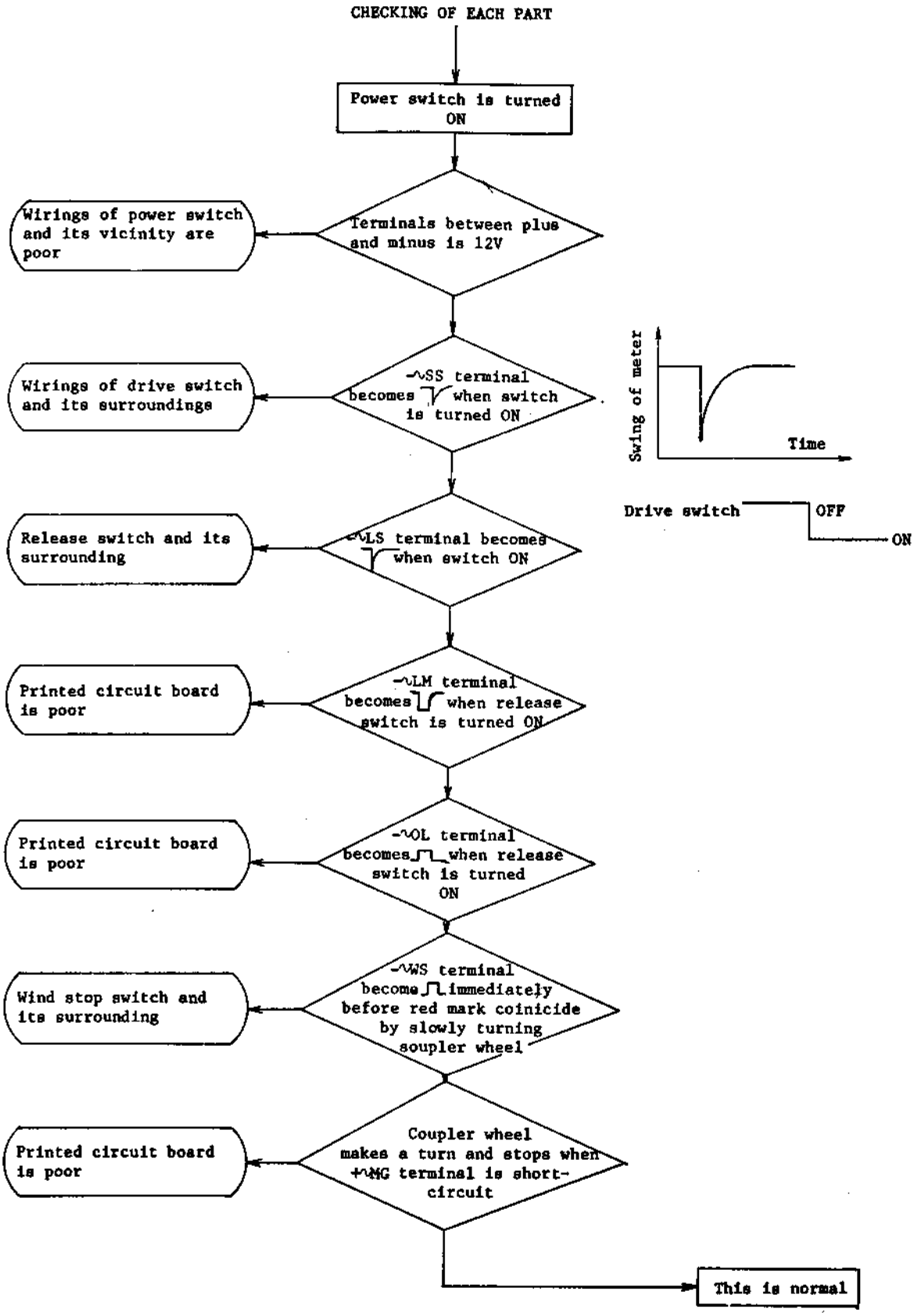
The camera stops to wind when the first frame of film is fed to the designated position after the leader portion of a roll of film has been wound. After that the motor becomes overload condition as it attempts to rotate further, and by this, the overload detection circuit starts to operate and reset FF(H) and FF(B) and then set the overload display FF(J). By the reset of FF(H) and FF(B), the motor becomes OFF.

By the set of FF(J), the overload display circuit is caused to operate and causes LED (G) to light.

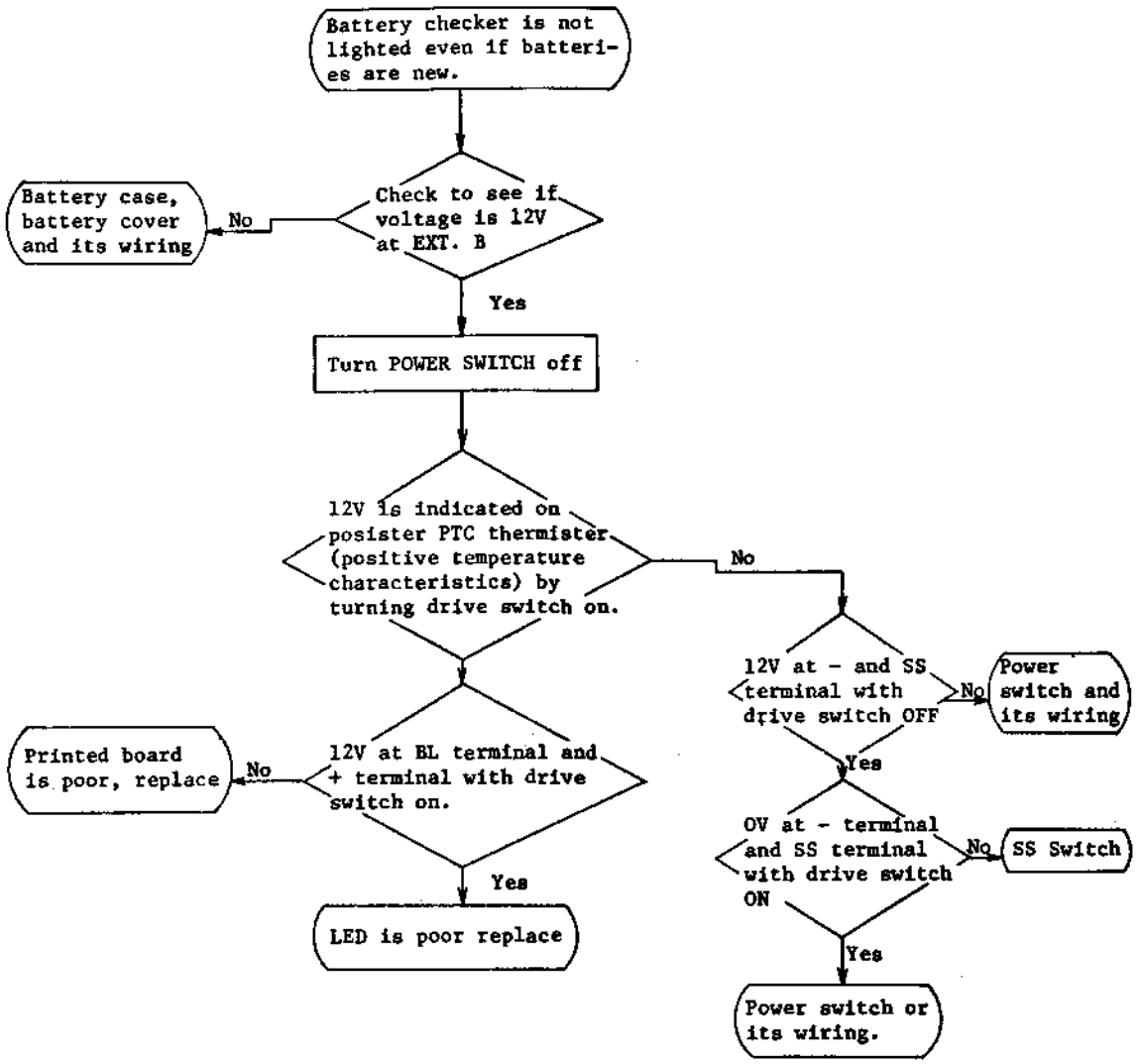
LED(G) keeps to light until FF(J) is reset. The reset of FF(J) is accomplished by the release switch.

All FFs are reset by the OFF→ON operation of power source.

The battery checker circuit (L) is caused to operate when the drive switch is turned ON with the power switch kept OFF, and it causes LED(N) to light when it has a power voltage of more than 7 to 8V.


CHECKING OF EACH PART
Power switch is turned ON
Terminals between plus and minus is 12V
Wirings of power switch and its vicinity are poor
-∿SS terminal becomes ⎍ when switch is turned ON
Wirings of drive switch and its surroundings
Swing of meter
Time
Drive switch
OFF
ON
-∿LS terminal becomes ⎍ when switch ON
Release switch and its surrounding
-∿LM terminal becomes ⎍ when release switch is turned ON
Printed circuit board is poor
-∿OL terminal becomes ⎍ when release switch is turned ON
Printed circuit board is poor
-∿WS terminal become ⎍ immediately before red mark coinicide by slowly turning soupler wheel
Wind stop switch and its surrounding
Coupler wheel makes a turn and stops when +∿MG terminal is short-circuit
Printed circuit board is poor
This is normal

《CIRCUIT CHECKING METHOD》


Battery checker is not lighted even if batteries are new.
Check to see if voltage is 12V at EXT. B
No
Battery case, battery cover and its wiring
Yes
Turn POWER SWITCH off
12V is indicated on posister PTC thermister (positive temperature characteristics) by turning drive switch on.
No
12V at BL terminal and + terminal with drive switch on.
No
Printed board is poor, replace
Yes
LED is poor replace
12V at - and SS terminal with drive switch OFF
No
Power switch and its wiring
Yes
OV at - terminal and SS terminal with drive switch ON
No
SS Switch
Yes
Power switch or its wiring.

ETR / ZENZANON 75mm Lens

Repair Manual

	Trouble	Cause	Remedy	
1	Poor synch conductivity	(1) Shutter green cord is poorly soldered.	o Resoldering	P14
		(2) Contact piece, insulating plate are poorly connected.	o Replace contact piece and insulating plate set.	P13,14
		(3) Shutter green cord is broken.	o Replace shutter	P9∿12 (S)
2	Synch is poorly insulated	(1) Flux was incompletely wiped when contact piece and insulating plate set and shutter were soldered.	o Wipe flux with lens cleaning paper or similar articles using ether-mixed alcohol and coat silicon varnish.	P14
		(2) After wiping flux, silicon varnish was not coated.	o Wipe lightly with in ether-mixed alcohol and coat silicon varnish.	P14
		(3) Shutter itself is poorly insulated.	o Replace shutter.	P9∿12 (S)
		(4) Contact piece and insulating plate set itself is poorly insulated.	o Replace contact piece and insulating plate set.	P13,14
3	Diaphragm resistance value insecure	(1) Warped printed circuit (PCB) board of diaphragm resistance.	o Replace shutter	P9∿12 (S)
		(2) Dirty back of printed circuit board of diaphragm resistance.	o Clean back of printed circuit board with ether-mixed alcohol.	P17
		(3) Broken brush legs of printed circuit board of diaphragm resistance.	o Replace shutter	P9∿12 (S)
		(4) Poor connection of contact piece and insulating plate set.	o Replace contact piece and insulating plate set.	P13,14
		(5) Improper angle of brush at the back of printed circuit board of diaphragm resistance.	o Correct brush angle	P17

(1) Note: (s) indicates satndard manual.

	Trouble	Cause	Remedy	
4	Diaphragm resistance value is not shown	(1) Dirty contact piece and insulating plate set and shutter contact.	o Clean with ether-mixed alcohol solution	P13
		(2) Broken wire in contact piece and insulating plate set.	o Replace contact piece and insulating plate set.	P13,14
		(3) Broken wire in shutter white cord.	o Replace shutter.	P9∿12 (S)
5	Short circuit of diaphragm resistance value	(1) Short circuit in shutter white cord.	o Replace shutter.	P9∿12 (S)
		(2) Short circuit in contact piece and insulating plate set.	o Replace contact piece and insulating plate set.	P13,14
6	Diaphragm resistance values become improper values.	(1) Short circuit in contact piece and insulating plate set.	o Replace contact piece and insulating plate set.	P13,14
		(2) Short-circuit of wirings inside the shutter.	o Replace shutter.	P9∿12 (S)
7	Shutter releasing speed skips intermittently.	(1) Deformed base plate of set ring.	o Replace set ring unit.	P10
		(2) Poor movement of set ring unit.	o Replace set ring unit.	P10
		(3) Dirty contact piece and insulating plate set and shutter contact.	o Clean with ether-mixed alcohol.	P13
		(4) Poor connection of contact piece and insulating plate set.	o Replace contact piece and insulating plate set.	P13,14
		(5) Defective shutter.	o Replace shutter	P9∿12 (S)
8	Shutter speed of one second is variable.	(1) Defective shutter.	o Replace shutter.	P9∿12 (S)
9	Shutter speed, 1/250, 1/125 slightly slow or faster.	(1) Defective shutter.	o a) Volume adjustment inside shutter b) If impossible, replace shutter.	(S) 23,24

	Trouble	Cause	Remedy	
10	Shutter speed skips.	(1) Poor soldering of shutter and contact piece insulating plate set.	o Resoldering etc.	P14
		(2) Short-circuit of wiring inside the shutter.	o Replace shutter	P9∿12 (S)
		(3) Sticky operation of set ring unit.	o Replace set ring unit.	P10
		(4) Deformed set ring base plate.	o Replace set ring unit.	P10
		(5) Poor connection of contact piece and insulating plate set.	o Replace contact piece and insulating plate set.	P13,14
		(6) Dirty contact piece and insulating plate set and shutter contact.	o Clean contact with ether-mixed alcohol.	P13
11	Shutter speed, 1/250, 1/125 are variable.	(1) Defective shutter	o a) Volume adjustment inside shutter.	(S) 23,24
			b) If impossible, replace shutter.	P9∿12 (S)
12	Shutter speed 1/500 slow, fast or varies	(1) Defective shutter	o Replace shutter	P9∿12 (S)
13	Shutter speed skips every other time	(1) Defective shutter	o Replace shutter	P9∿12 (S)
14	Poor feeling in moving out or in of helicoid, unstable rotation	(1) Poor tightening of set screws in installing helicoid and scale.	o Redo tightening of set screws.	(S) 29,30
		(2) Poor tightening of scale ring after mechanical focus adjustment.	o Redo tightening of scale ring.	(S) 28
		(3) Poor installation of straight plate.	o Correct installation of straight plate.	P15,16
		(4) Defective straight plate.	o Replace straight plate.	P15,16
		(5) Poor helicoid at lead screw portion	o Replace helicoid.	P9∿12 (S)
15	Poor feeling in moving out or in helicoid. o Uneven rotation	(1) Por helicoid at lead screw portion.	o Replace helicoid	P9∿12 (S)
		(2) Foreign matter in lead screw of helicoid.	o Clean lead screw portion	P15,16

	Trouble	Cause	Remedy	
16	Poor feeling in moving out or in helicoid. o Loose rotation	(1) Poor installation of straight plate.	o Correct installation of straight plate.	P15,16
		(2) Defective straight plate.	o Replace straight plate.	P15,16
17	Poor feeling in moving out or in of helicoid. o Slant rotation	(1) Due to incorrect tightening of scale ring after mechanical focus adjustment, helicoid and scale ring are slightly expanded and cause bayonet ring to slant.	o Redo installation and tightening of scale ring.	(S) 28
18	Poor feeling in moving out or in of helicoid. o Rough rotation	(1) Helicoid is poor at lead screw portion.	o Replace helicoid.	P9∿12 (S)
		(2) Foreign matter inserted at lead screw portion of helicoid.	o Clean lead screw portion.	P15,16
19	Poor return of manual diaphragm	(1) Manual lever axis floats due to shallow countersink.	o Additional machining of countersink for manual lever, or replace.	P10
		(2) Manual lever axis slightly hits groove inside helicoid due to deep countersink.	o Replace manual lever.	P10
		(3) Manual arm of front frame unit is poor in movement due to incomplete painting and deformation.	o Replace front frame unit.	P10
		(4) Defective shutter.	o Replace shutter.	P9∿12 (S)
20	T change-over shutter does not operate.	(1) Poor connection of T change-over arm of front frame unit and shutter.	o Reassemble	(S) 12,13
		(2) Defective shutter.	o Replace shutter.	P9∿12 (S)
21	MG display keeps to light or lighted while in winding, while M switch is being inspected by timing gauge.	(1) Defective shutter.	o Replace shutter.	P9∿12 (S)

	Trouble	Cause	Remedy	
22	Shutter blades do not open at winding.	(1) Defective shutter.	o Replace shutter.	P9 ∿ 12 (S)

6. DISASSEMBLY OF 75mm LENS

1) Replacement of 75mm lens elements

[Step 1]

Remove the name ring (1) with a name ring installing jig (4).

[Step 2]

Remove the front lens group (2) with a pin face jig (5).

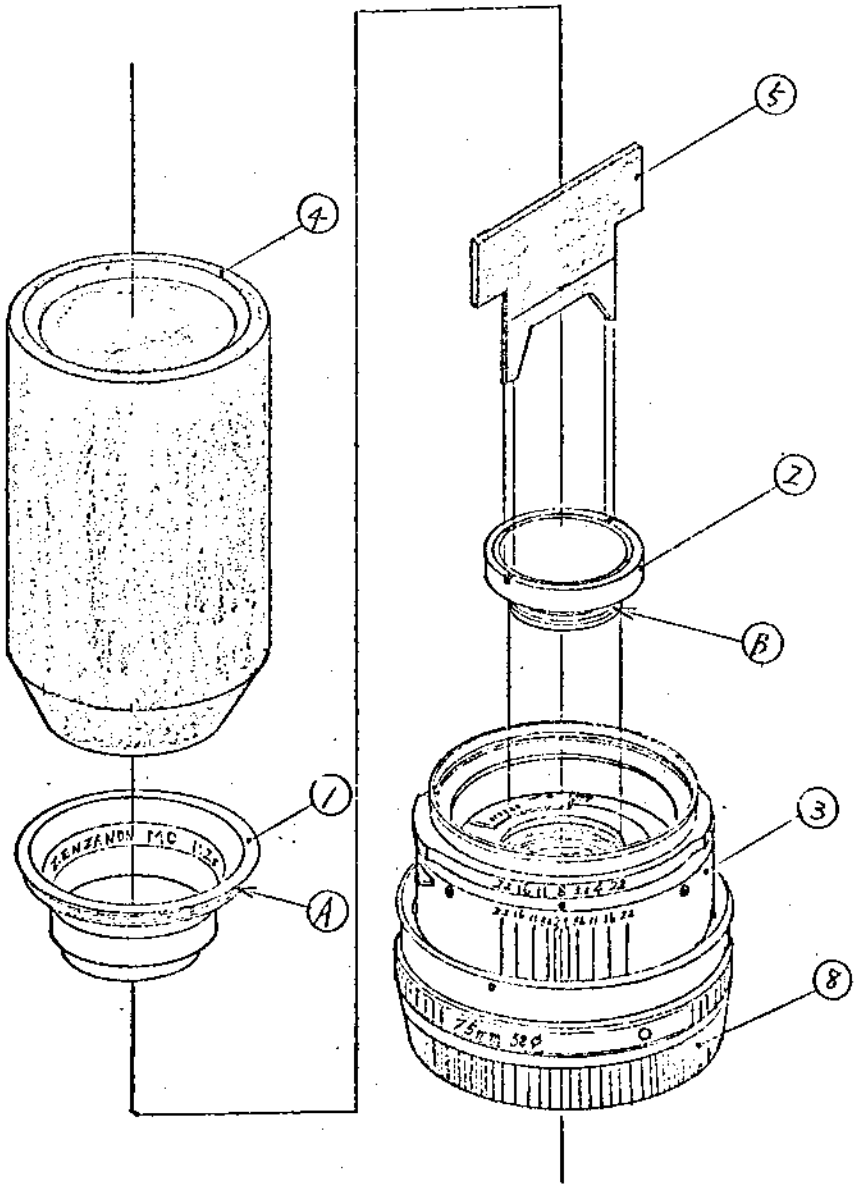


Fig. 1

[Step 3]

Remove the rear lens group ⑥ with a pin face jig ⑦.

[Step 4]

Screw in a new front lens group ② and rear group ⑥ into respective screw portions with grease (ROJIMORU #4019) coated by using pin face jigs ⑦ and ⑤.

(Note)

1. In case either front or rear group is required to be replaced, a set of front and rear group should be replaced.

2. In replacing lens elements, select a lens which conforms with a washer used between the shutter and helicoid.

Lens color indication	Washer for adjustment
Orange	0.8 t (mm)
Blue	
Yellow	0.7
Green	0.5
Purple	0.3
Red	0.1

3. Be sure to make mechanical focus adjustment after replacing lenses.

4. In replacing a front group of lens, be sure to install a rear cap ⑧.

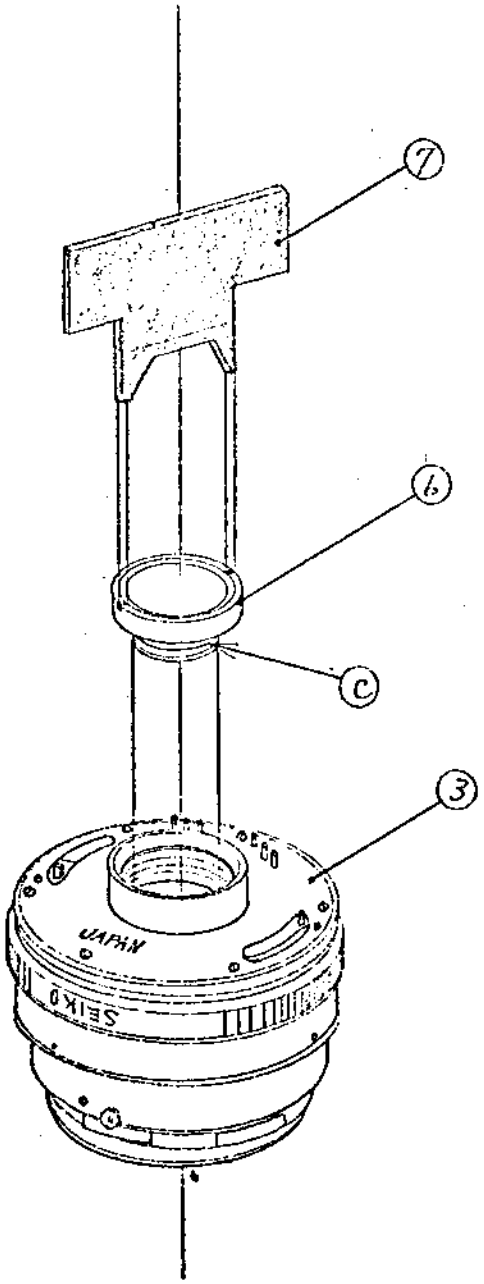


Fig. 2

8	1-242602	Rear cap
7	1-210180-AJ	Lens rear group pin face
6	1-210180	Lens rear group
5	1-210180-AJ	Lens front group pin face
4	1-210482-AJ	Name ring installing jig
3	1-710100	Helicoid installed with front and rear frame
2	1-210180	Front lens group
1	1-210482	Name ring

6. 2) Replacement of shutter

[Step 1]

Remove the name ring and lens first as described in 6.1).

[Step 2]

Remove a leatherette ring (3).

[Step 3]

Loosen set screw (5) and pull out the helicoid scale (2).

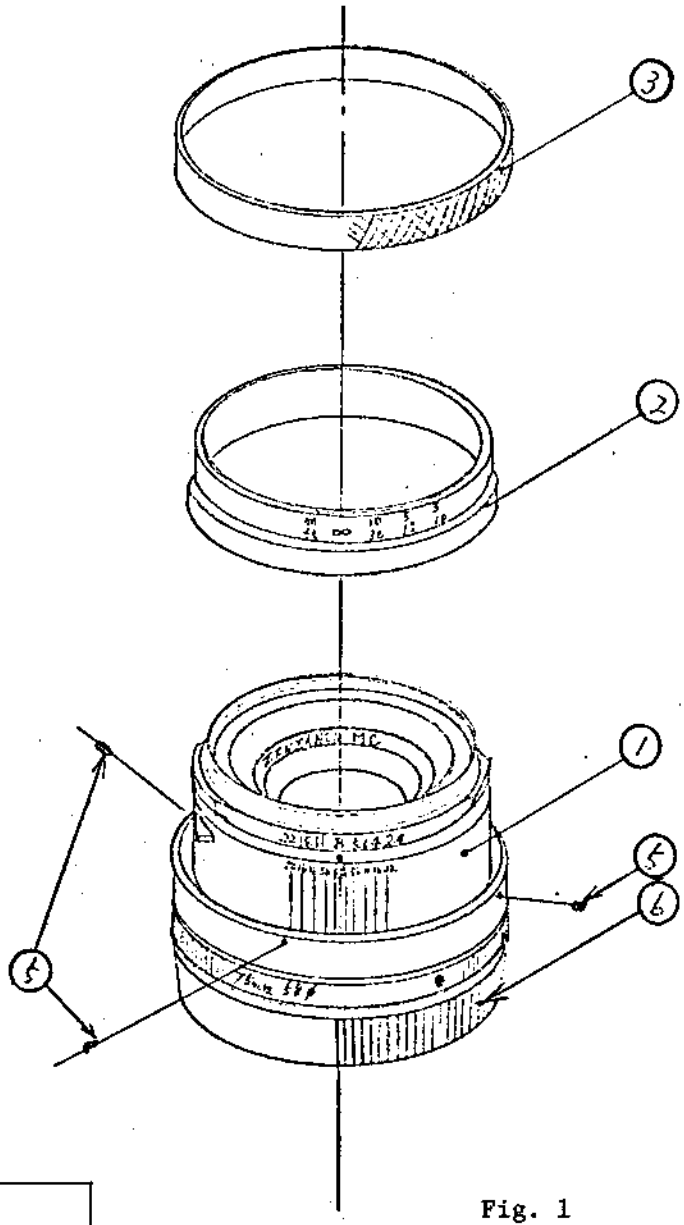


Fig. 1

6	1-242602	Rear cap
5	5-063026	Set screw
3	1-210512	Leatherette
2	1-210284	Helicoid scale
1	1-710010	Helicoid with lens assembled

[Step 4]

Remove screw (14).

[Step 5]

Remove the front frame unit (1), depth of field scale ring (2), manual lever set (13).

[Step 6]

Remove the light-tight ring (4) with care exercised not to bend it as it was adhesive fixed. If it is hard to remove, apply small amount of amyl acetate and remove it after a little while.

[Step 7]

Remove screws (16) and (17), and then remove the set ring unit.

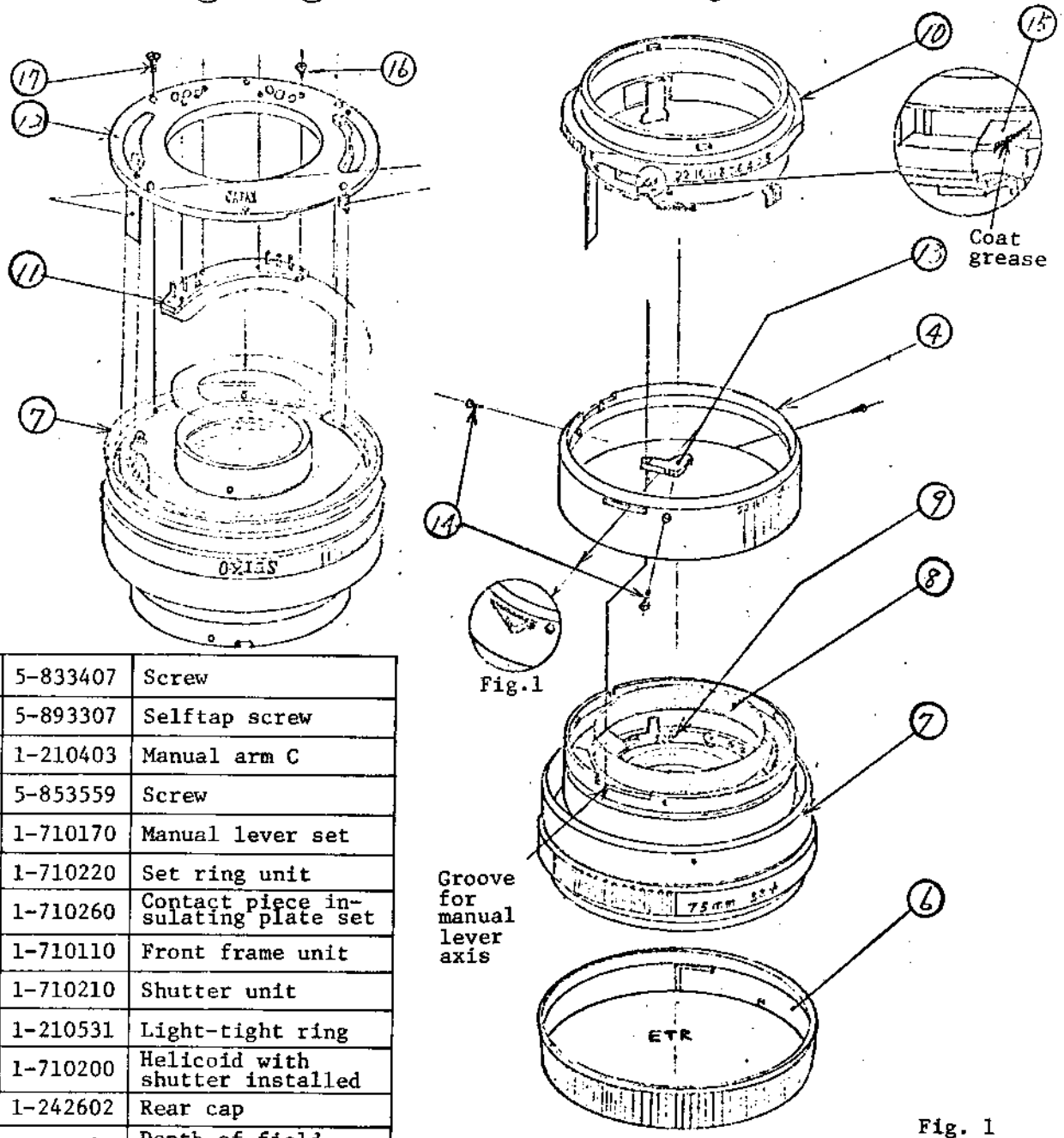


Fig. 1

17	5-833407	Screw
16	5-893307	Selftap screw
15	1-210403	Manual arm C
14	5-853559	Screw
13	1-710170	Manual lever set
12	1-710220	Set ring unit
11	1-710260	Contact piece insulating plate set
10	1-710110	Front frame unit
9	1-710210	Shutter unit
8	1-210531	Light-tight ring
7	1-710200	Helicoid with shutter installed
6	1-242602	Rear cap
4	1-210295	Depth of field scale ring

Fig.1

[Step 8]

Detach the shutter cord soldered to the contact piece and insulating plate set (11) by using a soldering iron.

[Step 9]

Set the helicoid with shutter installed (7) in the helicoid inner cylinder assembling jig (18) and remove the ring for installing shutter (21) by using a wrench for ring for installing shutter (19).

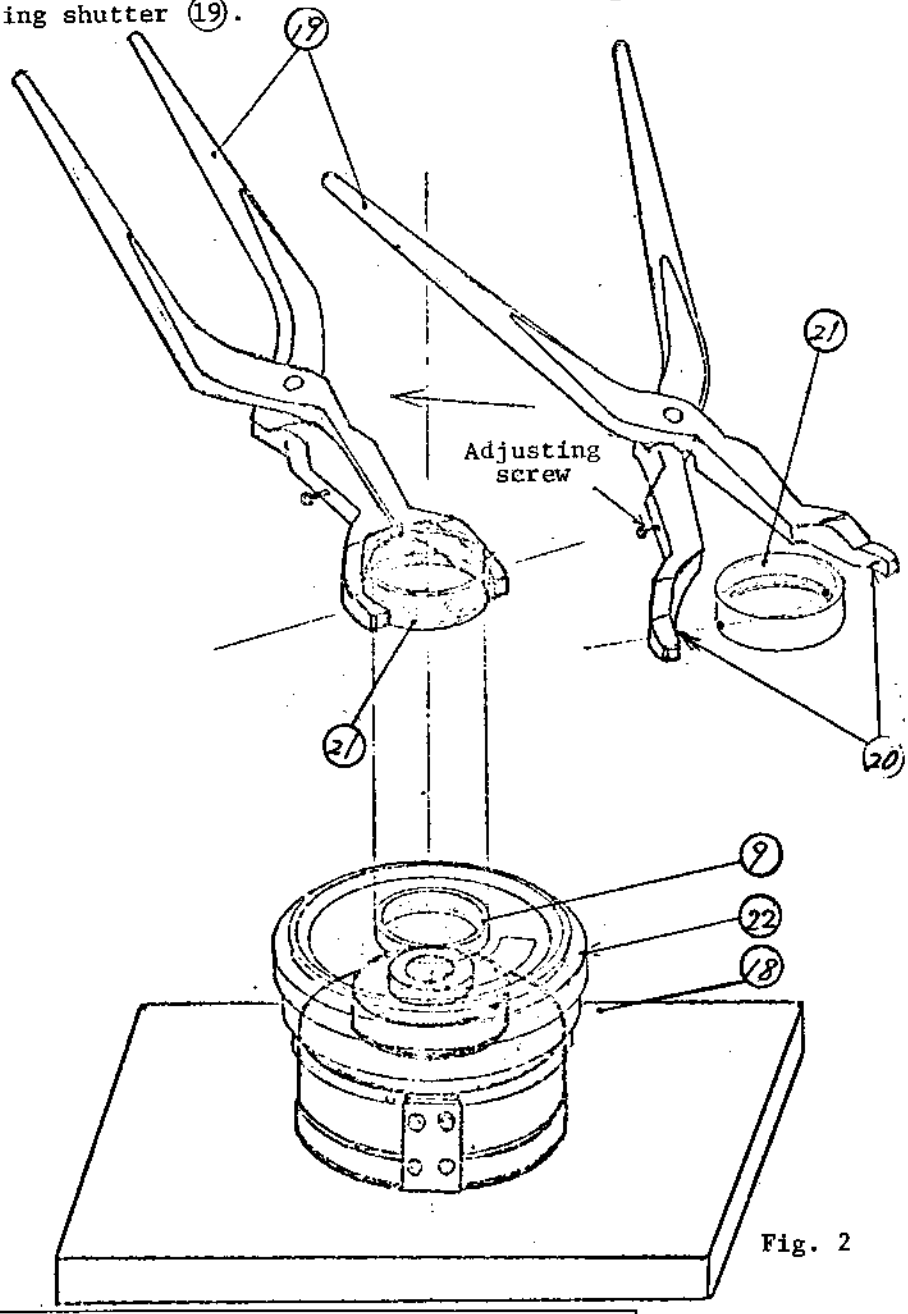


Fig. 2

22	1-710300	Helicoid unit
21	1-210152	Ring for installing shutter
20		Spanner pin for ring for installing shutter
19	1-210152 AJ	Spanner for ring for installing shutter
18	1-210013 AJ	Helicoid inner cylinder assembling jig
9	1-710210	Shutter unit

[Step 10]

Remove the shutter unit (9) from the helicoid unit (22).

[Step 11]

Replace the shutter unit (9) with a good one.

[Step 12]

After replacing a shutter unit (9), perform adjustment in accordance with the procedure set forth in the standard work instruction manual, 6-30 (excluding 8, 4 and 15).

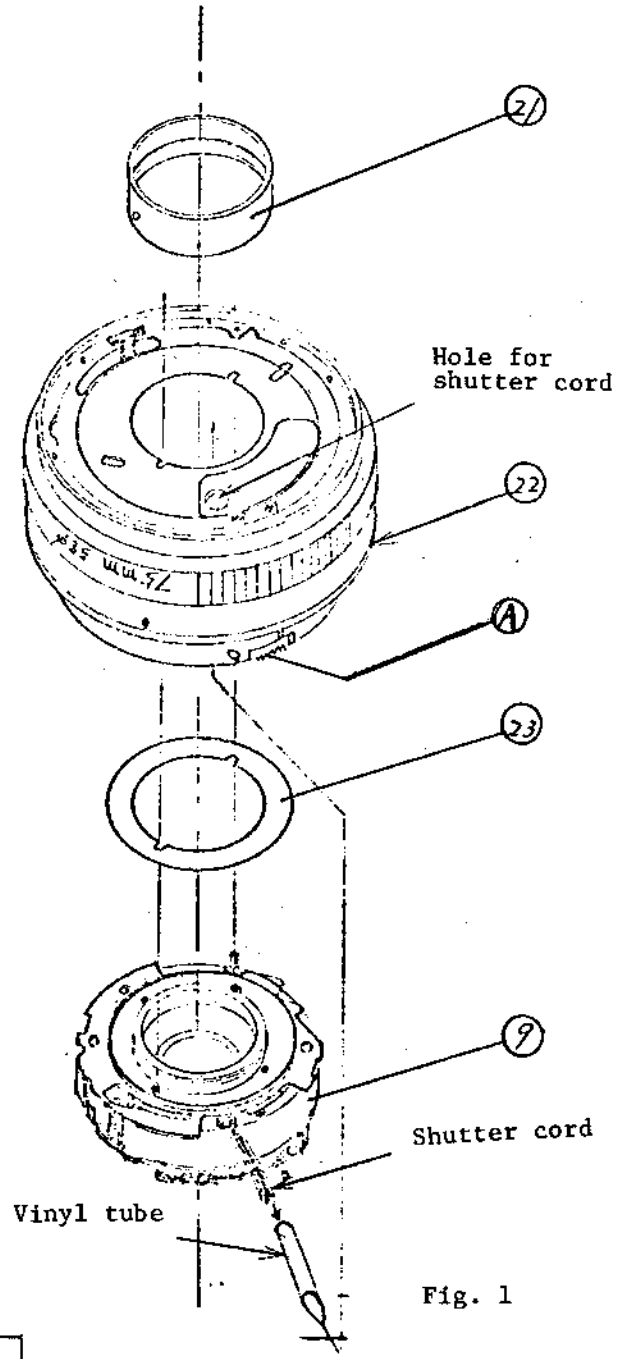


Fig. 1

23	1-210610	Washer for adjustment t 0.4
23	1-210600	" 0.3
23	1-210590	" 0.2
23	1-210171	" 0.1
22	1-710300	Helicoid unit
21	1-210152	Shutter installing ring
9	1-710210	Shutter unit

6. 3) Replacement of contact piece and insulating plate set

[Step 1]

Remove the set ring unit by the proceudre of 7 and 8 of Par. 6. 2), and disconnect the contact piece and insulating plate set (1) and shutter cord.

[Step 2]

Peel off the contact piece and insulating plate set (1) from the helicoid inner cylinder (3).

[Step 3]

Attach a piece of flexible fixing tape (2) to the contact piece and insulating plate set (1) by the proceudres shown in Fig. 1 and 3.

[Step 4]

Attach the contact piece and insulating plate set (1) to the helicoid inner cylinder (3) by means of flexible fixing tape (2). At this time, they must be fixed with the center of a straight plate (5) adjusted to No. 2 contact of contact piece and insulating plate set (1).
Care should be exercised to maintain a proper gap between the contact piece and insulating plate set (1) and the helicoid inner cylinder.

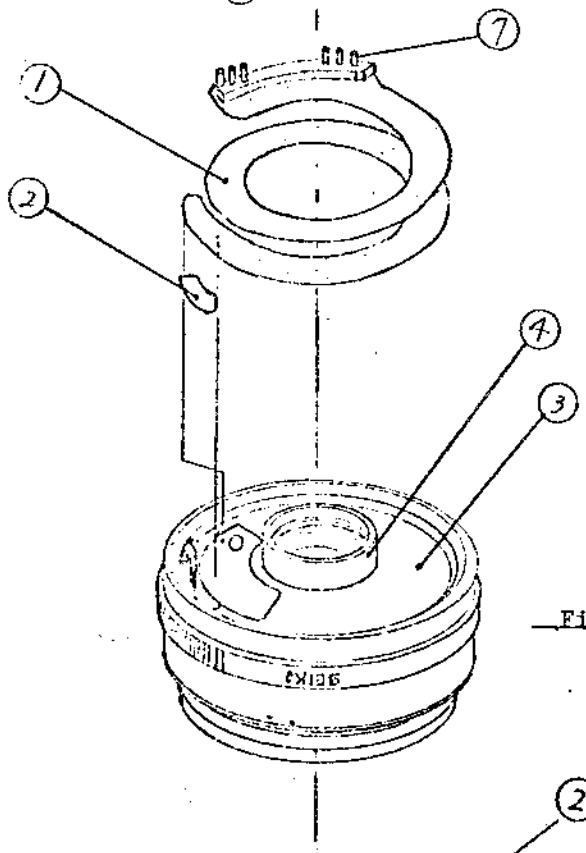


Fig. 1

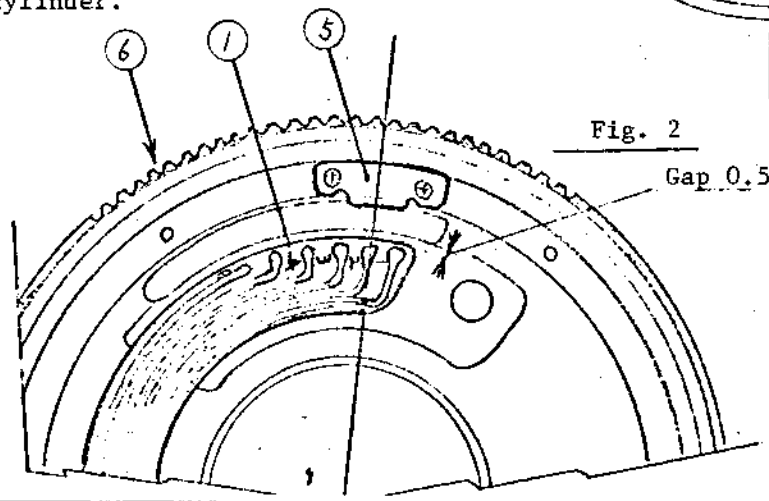


Fig. 2

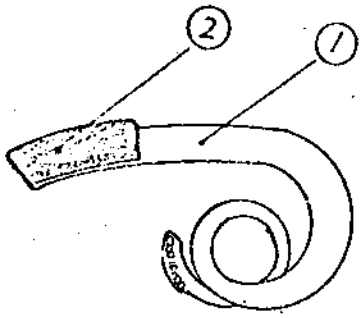


Fig. 3

7	1-210121	Shutter contact
6	1-710300	Helicoid unit
5	1-210142	Straight plate
4	1-210152	Shutter installing ring
3	1-210015	Helicoid inner cylinder
2	1-210521	Flexible fixing tape
1	1-710260	Contact piece and insulating plate set

[Step 5]

Place preliminary solder at 6 contact points of the contact piece and insulating plate set (1).

[Step 6]

Solder each cord of shutter to each contact of the contact piece and insulating plate set (2). At this time connect each cord with the contact piece and insulating plate set (1) as shown in Table 1 and care should be exercised not to have cords overlapped.

[Step 7]

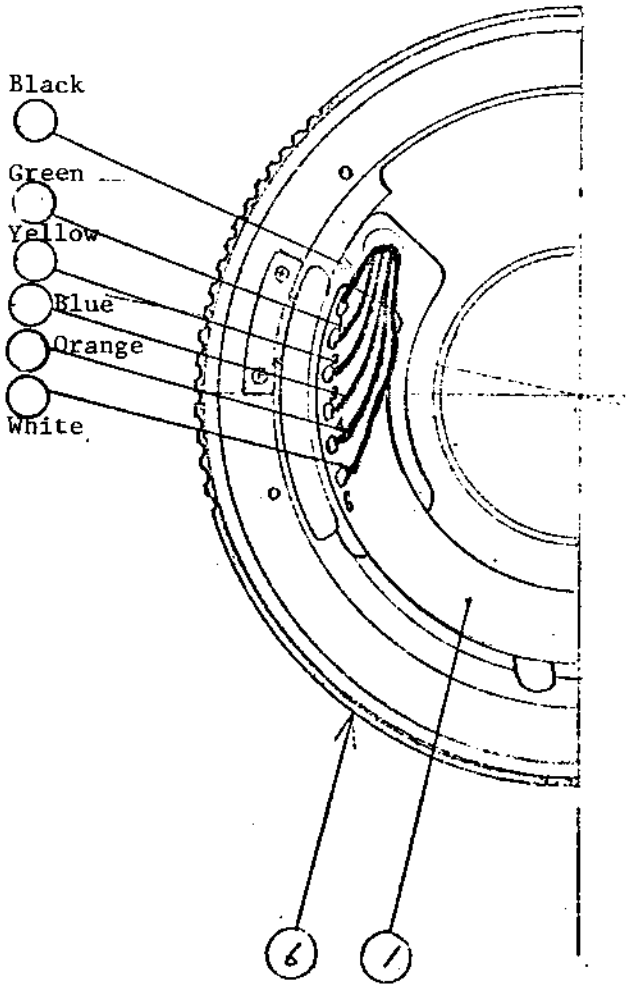
After soldering, clean flux with ether-mixed alcohol, dry it by hot air, apply silicon varnish with a brush and then dry soldered portion naturally.

Information: Silicon varnish (KR 114 manufactured by Shinetsu Kakagu Co.)
Solvent, RIGUROIN (Nippon Sekiyu)

Silicon varnish: solvent = 1 : 10 ∿ 20

Color of shutter cord	Contact No. of contact insulating plate set
Black	1
Green	2
Yellow	3
Blue	4
Orange	5
White	6

Table 1



6	1-710300	Helicoid unit
1	1-710260	Flexible print board A-B

6. 4) Disassembly and reassembly of helicoid

a) Procedure for disassembly

[Step 1]

Remove the screw (16) and then remove the straight plate (15).

[Step 2]

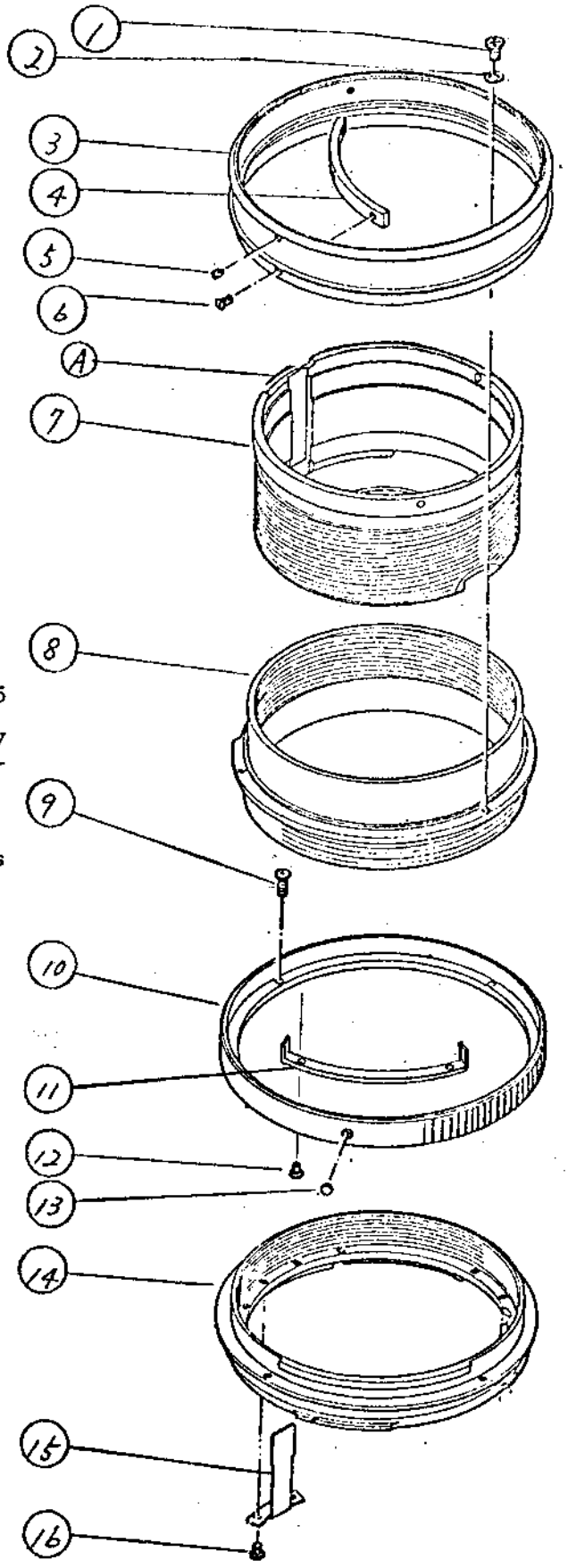
Remove the helicoid inner cylinder. (Right-handed screw)

[Step 3]

Remove a scale ring fixing screw (1) and then remove the helicoid scale ring.

[Step 4]

Remove the helicoid intermediate cylinder. (Left-handed screw)



Note)

- o The grease to be used for helicoid lead screw portion is ROJIMORU #74075
- o In applying this grease, do not apply too much. Much grease may be squeezed out.
- o Lead screw portion must be protected from dust, etc. Such foreign matters may worsen the movement of helicoid.

16	1-813307	Screw
15	1-210142	Straight plate
14	1-210035	Lens bayonet
13	1-210240	Bayonet ring index
12	1-210720	Stopper calking pin
11	1-210710	Bayonet ring stopper
10	1-210042	Bayonet ring
9	5-811357	Screw
8	1-210022	Helicoid intermediate cylinder
7	1-210015	Helicoid inner cylinder
6	5-831257	Screw
5	5-063026	Set screw
4	1-210261	Helicoid stopper
3	1-210252	Helicoid scale ring
2	5-511421	Washer
1	1-210272	Scale ring installation

6. 4)

b) Procedure for assembly

[Step 1]

Install an index (13) and bayonet ring stopper on the bayonet ring.

[Step 2]

Install the bayonet ring (10) on the lens bayonet (14).

[Step 3]

Screw in the helicoid intermediate cylinder (8) into the lens bayonet (14) until it comes to a stop and then rotate it by an angle of 90° to the right.

[Step 4]

Set the helicoid scale ring (3) with helicoid stopper (4) installed on the helicoid for which steps up to 3 have been done, and rotate the helicoid stopper (4) and bayonet ring stopper (11) until they stop and fix them with the scale ring set screw (1).

[Step 5]

Rotate the helicoid scale ring (3) to the left until it stops, and at the position, screw in the helicoid inner cylinder (7) into the helicoid intermediate cylinder (8). (Right-handed screw)

Note) Adjust the inscribed character of 58ϕ on the bayonet to (A) of the helicoid inner cylinder (7), and then screw it from the position.

[Step 6]

Rotate the helicoid inner cylinder (7) slightly back from its completely screwed in position and then install the straight plate (15).

Note) At the time, the overall length of the helicoid which is completely receded must be 38.4mm ± 0.4.

If this dimension is not obtained, change the screwed in position of the helicoid inner cylinder (7) described in Step 5 pitch by pitch until the above dimension is obtained.

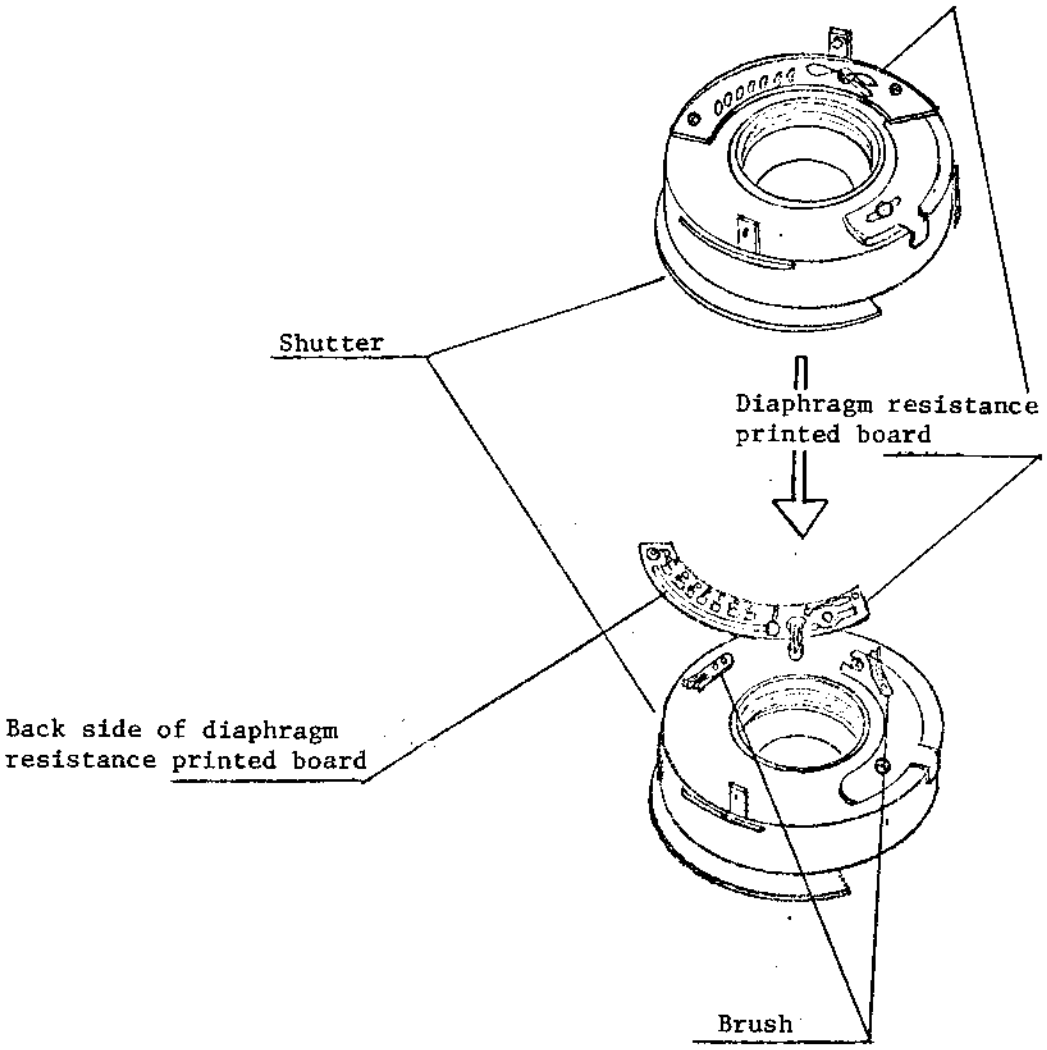
[Step 7]

Check the helicoid to see if it can be moved out or moved in smoothly and make adjustment if it is not smooth.

(Information)

Helicoid inner cylinder		M 66.4	P = 1.25	L = 20	
Helicoid intermediate cylinder	Inner	M 66.4	P = 1.25	L = 20	
	Outer	M 70	P = 1.0	L = 4	Left-handed screw
Lens bayonet		M 70	P = 1.0	L = 4	Left-handed screw

5. OTHERS


Shutter
Diaphragm resistance printed board
Back side of diaphragm resistance printed board
Brush

ORDER NO.

PROCESS: Assembly of helicoid installed with front rear frame

JOB : Installation of shutter to helicoid unit

[Step 1]

Set a shutter unit (1) on the helicoid inner cylinder assembly jig (7).

[Step 2]

Accoading to the color display of flange focal distance of lens, place a washer for adjustment with its share drop faced downward (2) on the shutter unit (1). (Refer to Table 1)

[Step 3]

Place a helicoid unit (3) on it. As shown in Fig. 1, thread cords of shutter (1) through a vinyl tube and place it through the hole for shutter cords (3).

[Step 4]

Set (A) of the helicoid unit (3) to the helicoid inner cylinder assembly jig (7) as shown in Fig. 2.

[Color chart for flange focal length]

Color	Washer for adjustment
Orange	0.8
Blue	
Yellow	0.7
Green	0.5
Purple	0.3
Red	0.1

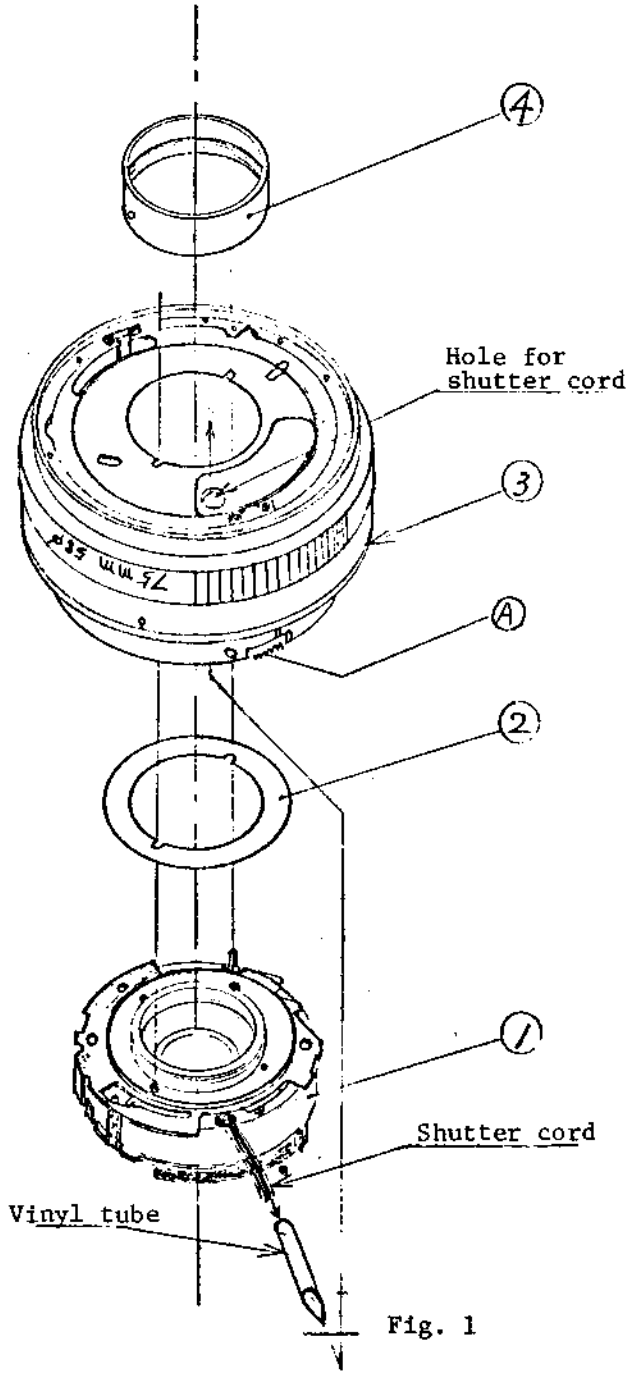


Fig. 1

2	1210610	Washer for adjustment	0.4		7	1-210013AJ Helicoid inner cylinder assembly jig
2	1210600	"	0.3		6	Spanner pin for installing shutter
2	1210590	"	0.2		5	Spanner for ring for installing shutter
2	1210171	"	0.1		4	Shutter installing ring
1	1710210	Shutter unit			3	Helicoid unit

ORDER NO.

PROCESS: Assembly of helicoid installed with front rear frame

JOB : Installation of shutter to helicoid unit

[Step 5]

To fix the helicoid unit (3) set on the helicoid inner cylinder assembly jig (7) and a shutter unit (1), tighten the shutter installing ring (4) with a spanner for shutter installing ring (4) as shown in Fig. (2). Tighten it securely. Do not damage the shutter installing ring (4). Make adjustment by means of an adjusting nut (5) so as not to have a spanner pin for shutter installing ring come off through the guide hole of shutter installing ring (4).

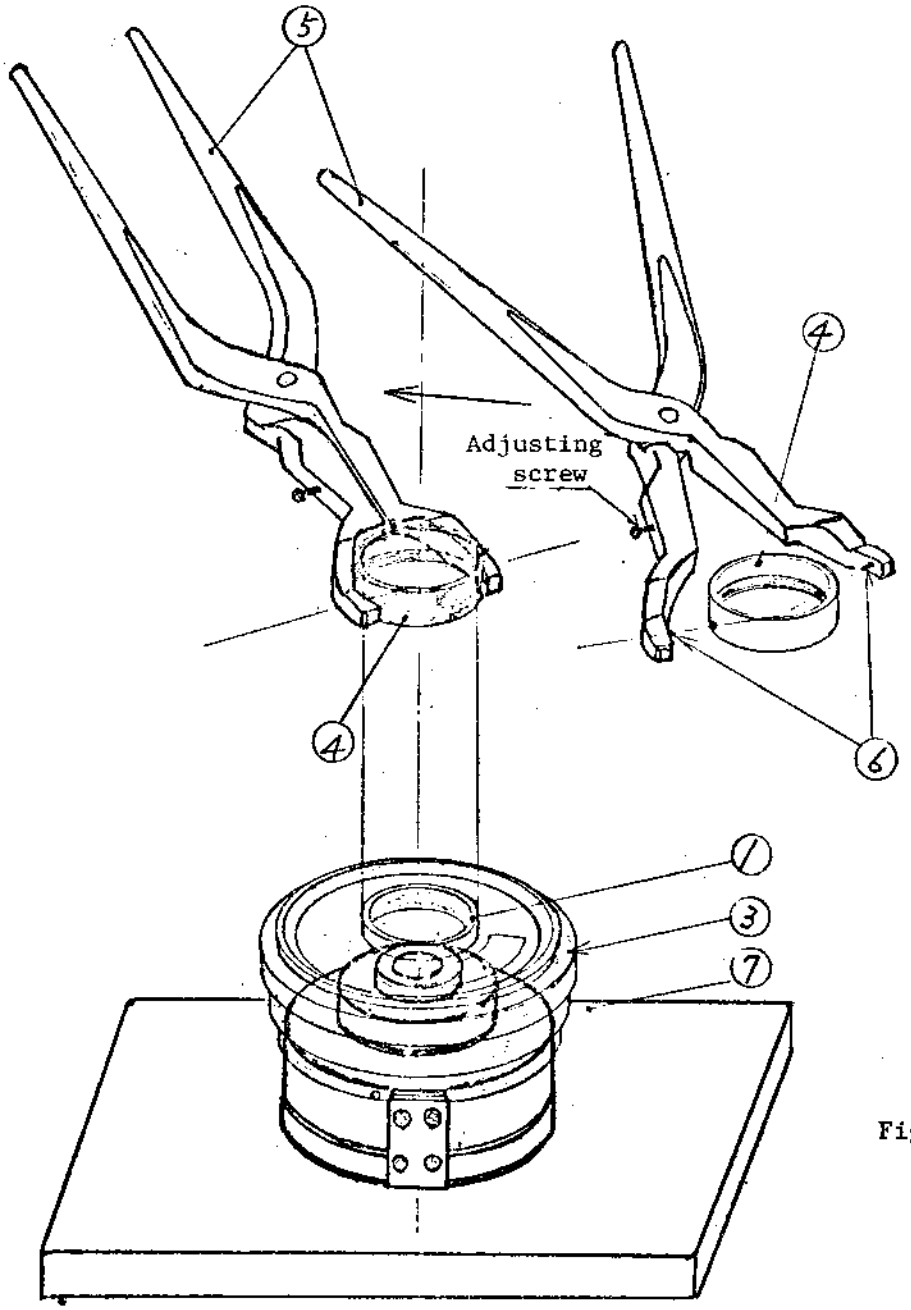


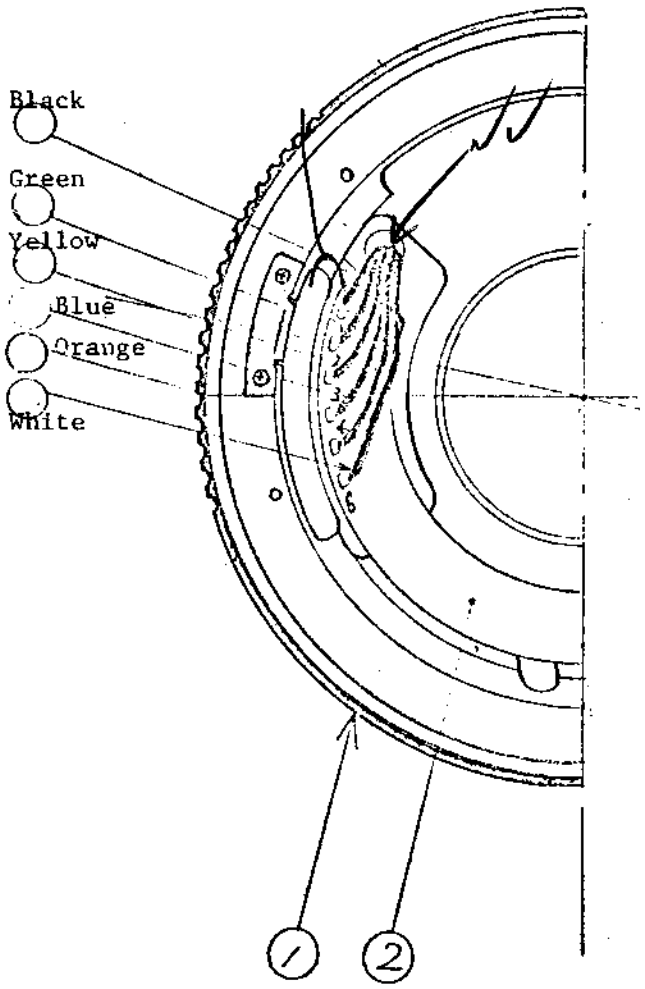
Fig. 2

ORDER NO.

PROCESS: Assembly of helicoid installed with front rear frame

JOB : Soldering of shutter and contact piece and insulating plate set

Color of shutter cord	Contact No. of plate
Black	1
Green	2
Yellow	3
Blue	4
Orange	5
White	6



[Step 1]

Place preliminary solder on each of 6 contacts of the contact piece and insulating plate set (2).

[Step 2]

Solder each cord of the shutter to each contact of the plate (2). Arrange cords to respective contacts as shown in the drawing and care should be exercised not to overlap cords.

[Step 3]

After soldering, wash flux with ether-mixed alcohol and dry it by hot air, apply silicon varnish with a brush all over the soldered portion and dry it naturally.

Information) Silicon varnish (KR 114 manufactured by Shinetsu Kagaku Co.)
Solvent RIGUROIN (Nippon Sekiyu)

Silicon varnish: solvent = 1 : 10 ∿ 20

2	1710260	Contact piece and insulating plate set	
1	1710300	Helicoid unit	

ORDER NO.

PROCESS: Assembly of helicoid installed with front rear frame

JOB : Assembly of set ring unit

[Step 1]

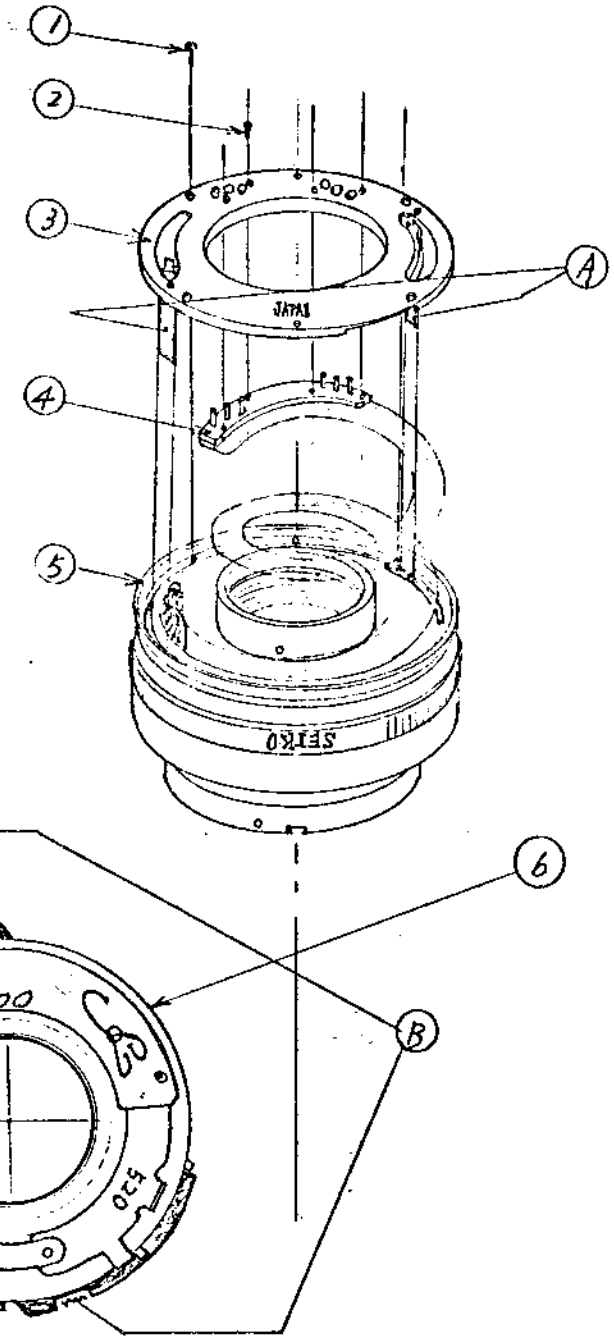
Tighten 6 terminals of the contact piece and insulating plate set (4) through the set ring base plate (3) by using 4 self-tap screws (2). Do not tighten these screws too tight as they may be damaged.

[Step 2]

Thread the leg A of the set ring set (3) through the groove B of the shutter unit (6) installed on the helicoid (5) and tighten it with 6 screws (1). Tighten screws with a constant torque not to have the set ring unit (3) floated.

(Note)

Prior to installing the set ring unit (3), check to see if its legs (A) move smoothly, there is a uniform gap between the unit and helicoid and it is not bent.



6	1710210	Shutter unit	
5	1710200	Helicoid with shutter installed	
4	1710260	Contact piece and insulating plate set	
3	1710220	Set ring unit	
2	5893307	Screw (selftap)	
1	5833407	Screw	

ORDER NO.

PROCESS: Assembly of helicoid installed with front rear frame

JOB : Installation of light-tight ring

[Step 1]

Install the light-tight ring (1) on the helicoid with shutter installed. (3) As shown in Fig. 2, have the rise portion of the light-tight ring slide into the guide groove of the helicoid's straight plate and set the ring so as to have its side B hit side A of the helicoid and those contacted surface should be adhered to each other with adhesive (bond). Their direction must be as shown in Fig. 1, and a rear cap (4) should be applied to protect the contact piece and insulating plate set others.

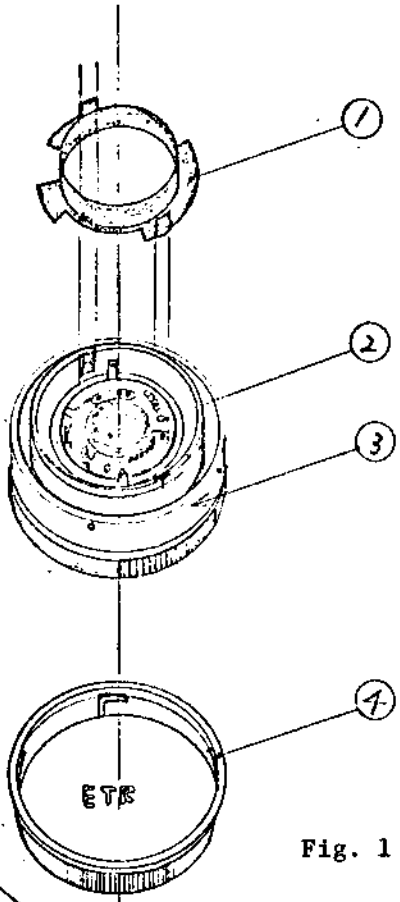


Fig. 1

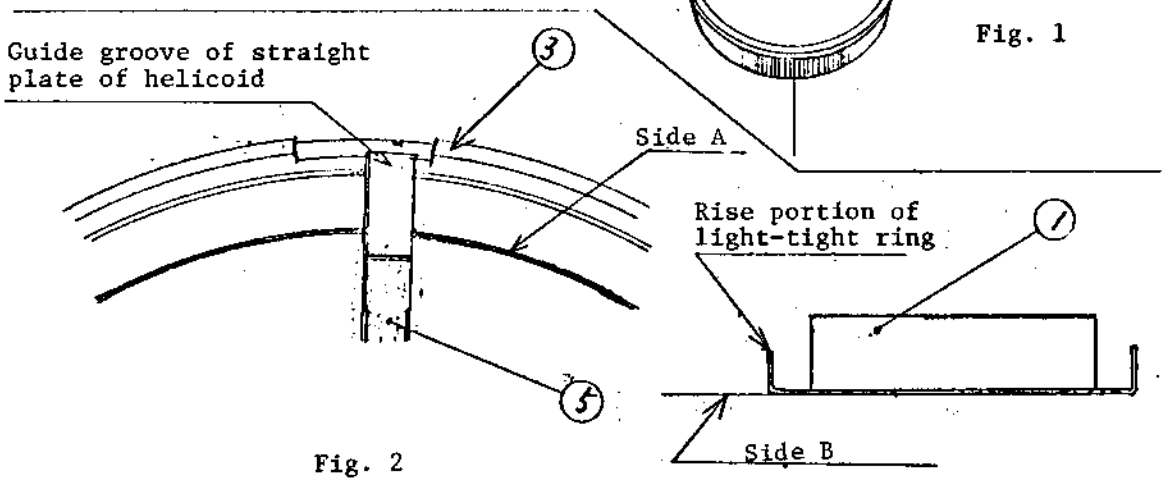


Fig. 2

5	1210142	Straight plate
4	1242602	Rear cap
3	1710200	Helicoid with shutter installed
2	1710210	Shutter unit
1	1210531	Light-tight ring

ORDER NO.

PROCESS: Assembly of helicoid installed with front rear frame

JOB : Installation of front frame unit and depth of field scale ring

[Step 1]

Apply a rear cap (6) to the helicoid with shutter installed for the purpose of protection.

[Step 2]

Set the manual lever set (13) at the side hole of a depth of field scale ring (2).

[Step 3]

Install the above unit on the helicoid with shutter installed (5). At this time, place the manual lever axis of the lever set (13) in the groove of the helicoid (5).

[Step 4]

Apply grease to the protion of manual arm C (15) of front frame unit (1) where it contact with the manual lever set (13). Fig.A.

[Step 5]

Lastly set the front frame unit (1) to the helicoid which has been assembled up to the stage of Step 3. At this time, adjust T change-over ring (8) to shutter AT change-over lever (11), diaphragm arm (9) to shutter diaphragm ring 10 and manual arm(B)(7) to shutter diaphragm lever (12) respectively. Tighten the unit with 3 screws (14) by applying locktite.

Note: Do not tighten them too tight.

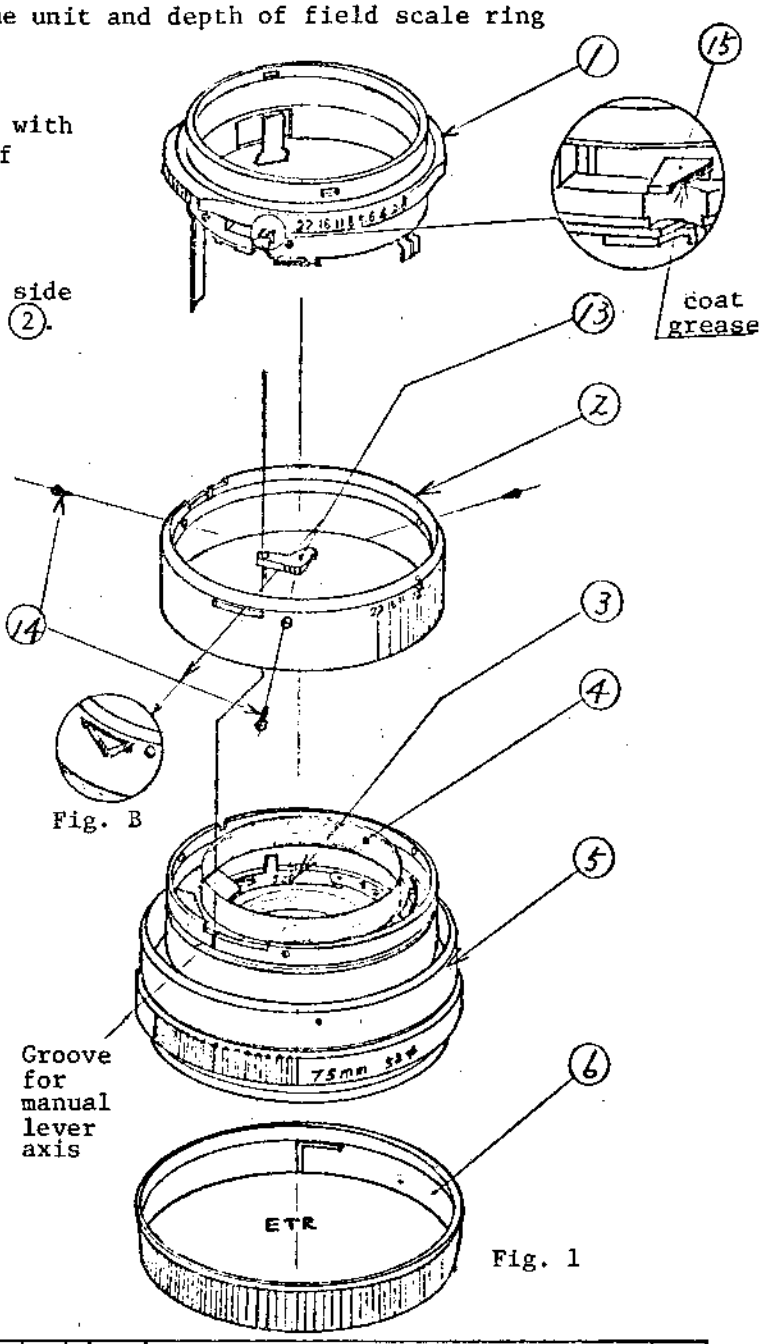


Fig. B

Fig. 1

8	1210351	T change-over ring	1				
7	1210392	Manual arm B	1		15	1210403 Manual arm C	1
6	1242602	Rear cap	1		14	5853559 Screw	3
5	1710200	Helicoid with shutter installed	1		13	1710170 Manual lever set	1
4	1210531	Light-right ring	1		12	Shutter diaphragm lever	1
3	1710210	Shutter unit	1		11	Shutter AT change-over lever	1
2	1210295	Depth of field scale ring	1		10	Shutter diaphragm ring	1
1	1710110	Front frame unit	1		9	1210342 Diaphragm arm	1

ORDER NO.

PROCESS: Assembly of helicoid installed with front rear frame

JOB : Installation of front frame unit and depth of field scale ring

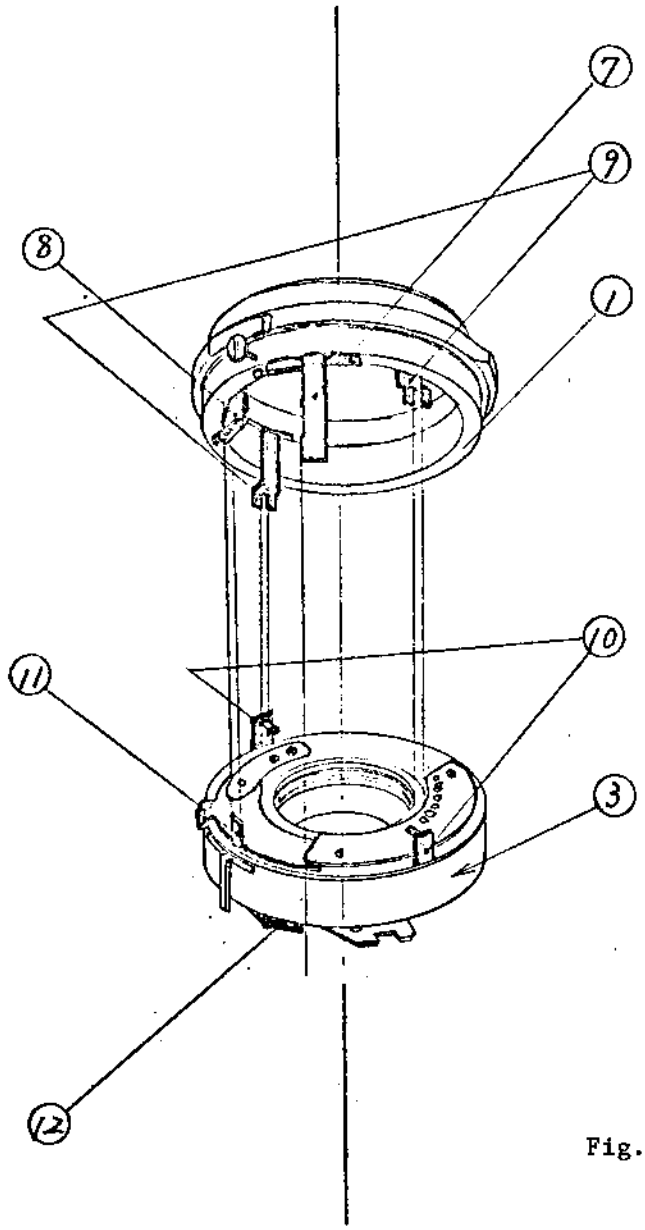


Fig. 2

ORDER NO.

PROCESS: Inspection of helicoid installed with front rear frame

JOB : Diaphragm resistance value M switch timing check

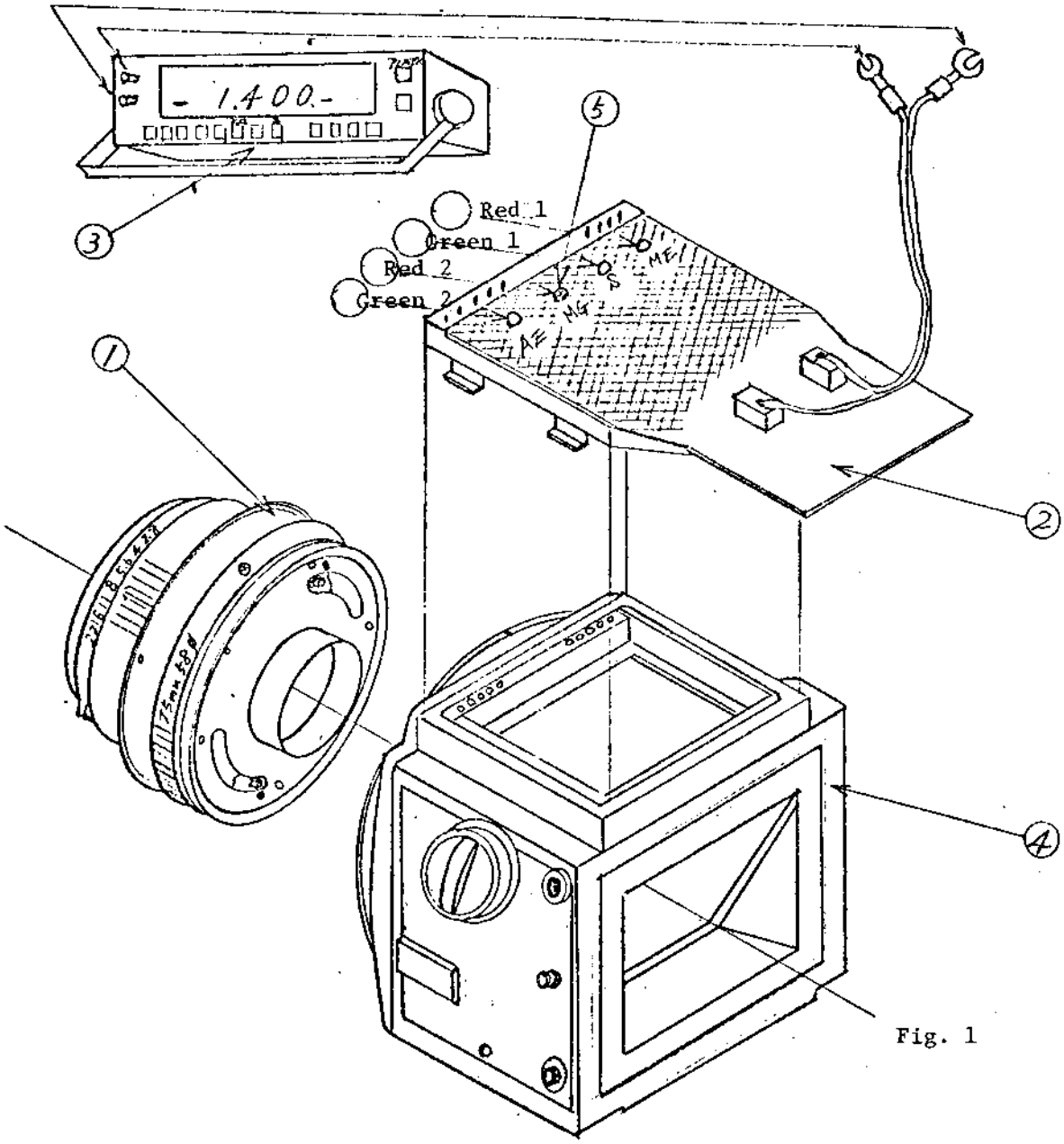


Fig. 1

5	MG display lamp
4	ETR standard body
3	Digital multitester (sanwa)
2	(1754500-CT)M switch timing gauge
1	Helicoid installed with front and rear frame 1710100

ORDER NO.

PROCESS: Inspection of helicoid installed with front rear frame

JOB : Diaphragm resistance value M switch timing check

[Step 1]

Set an M switch timing gauge (2) on the standard body (4).

[Step 2]

Set the helicoid with front and rear frame installed (1) on the standard body (4), and confirm that it performs functions as listed in Table 1 by releasing the shutter at slow speed (1 to 1/2 second) several times.

Note: o A unit of helicoid which is completely recorded and causes display lamps to light is judged to be defective. Such a helicoid installed with lens mechanically focus adjusted is judged to be perfect if it does not cause display lamps to light under completely receded condition.

o A unit which causes MG display lamp (5) to light when it is wound will be judged as defective.

Table 1

Condition of body and lens	Gauge display
Winding complete	Red 1 (ME) light ON
By about 1/2 stroke until shutter is released.	Red 1 (ME) light ON, Green 1 (S) is light OFF
S is pushed. Shutter open.	ME light OFF, S, MG light ON
S button is released (return)	ME, S light OFF, MG light ON
Shutter closes	ME, S, MG light OFF

ORDER NO.

PROCESS: Inspection of helicoid installed with front rear frame

JOB : Diaphragm resistance value M switch timing check

[Step 1]

As shown in Fig. 1, connect the M switch timing gauge (2) to a digital multi-tester (3) and set the range of the tester at 2KΩ.

[Step 2]

Rotate the aperture ring (7) and read out each resistance value at click position.
The range of diaphragm resistance values is as shown in Table 2.

[Step 3]

Confirm that relationship between the position of inscribed marks of the aperture ring (7) and that of depth of field scale ring (6) is on the datum line shown in Fig. 2.
If they are deviated in position, adjust them to the datum line by bending 2 aperture arms (9) by the same amount.

[Refer to Standard work instruction sheet No. 13]

[Step 4]

Check the aperture ring (7) if it rotate smoothly.

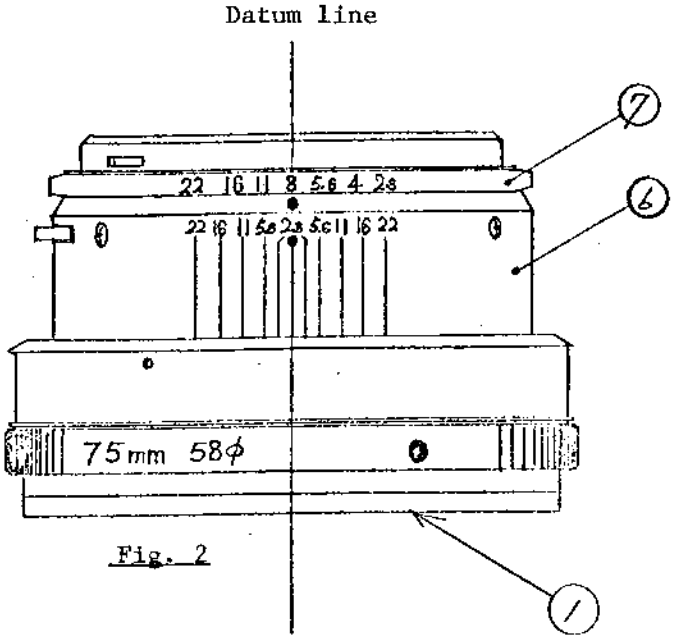


Fig. 2

Table 2

Diaphragm	Diaphragm resistance value
F 2.8	1330 ∿ 1470 Ω
4	1140 ∿ 1260
5.6	950 ∿ 1050
8	760 ∿ 840
11	570 ∿ 630
16	380 ∿ 420
22	190 ∿ 210

7	1210335	Aperture ring	1
6	1210295	Depth of field scale ring	1
1	1710100	Helicoid with front and rear frame installed	1

ORDER NO.

PROCESS: Inspection of helicoid installed with front rear frame

JOB : Shutter inspection

[Step 1]

Set the helicoid with front and rear frame installed on the standard body and check the operation of shutter by releasing it five times each at a speed of 1/8 to 1/30 with an aperture of F22 with the helicoid extended and receded respectively.

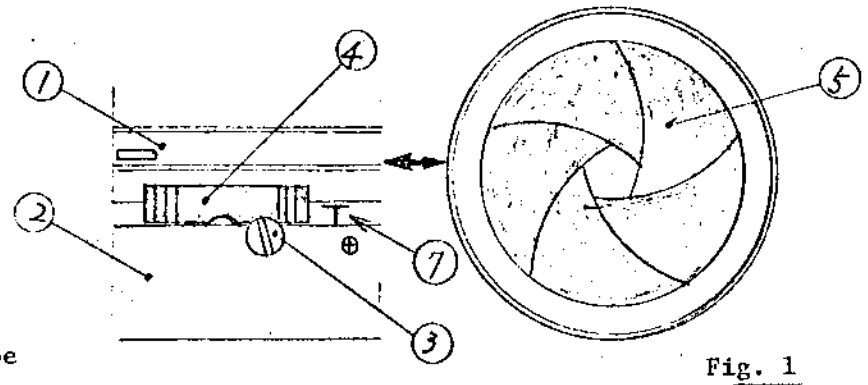


Fig. 1

o Item of inspection
1. Shutter vane (6) and diaphragm iris (5) must be smooth in movement.
2. The aperture of iris diaphragm (5) must be the same as standard aperture. Aperture must be accurate without variation.

[Step 2]

Set the T change-over lever of the helicoid with front and rear frame installed at the position shown in Fig. 1, and cause the shutter to operate, and after that put the lever back to the position shown in Fig. 2.

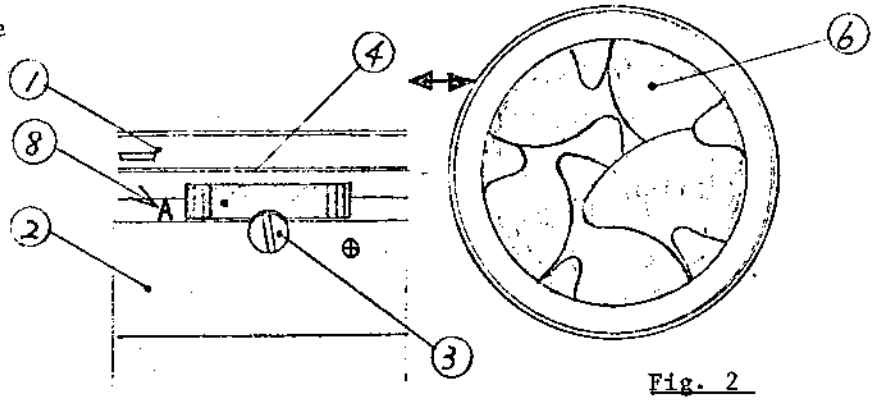


Fig. 2

At this time, T lever lock (3) must be kept loosened not to press the T change-over lever (4)

o Item of inspection
(1) When the shutter is pushed with T change-over lever (4) set at the position of Fig. 1, the shutter vane (6) must be held raised with diaphragm iris kept in the condition of Fig. 1. That is, the condition of Fig. 1.
(2) When the T change-over lever (4) is set at the position of Fig. 2, the shutter vane (6) of Fig. (2) must be lowered. That is, the condition of Fig. 2.
(3) T change-over lever (4) must be smooth in operation, and click movement must be made.
(4) Change-over of inspection items from 1 to 2 must be smooth and the operation of shutter vane (6) must be swift and stable at the time.

[Step 3]

After satisfying the above items of inspection, T lever lock (3) is tightened ant T change-over lever (8) is fixed.

4	1210362	T change-over lever		8	Inscribed character A on depth of field scale ring
3	1210621	T lever lock		7	" T "
2	1210295	Depth of field scale ring		6	Shutter vane
1	1210324	Front frame		5	Shutter diaphragm iris

ORDER NO.

PROCESS: Inspection of helicoid installed with front rear frame

JOB : Inspection of synch, conductivity and insulation

[Step 1]

Set the helicoid with front and rear frame installed on the standard body.

[Step 2]

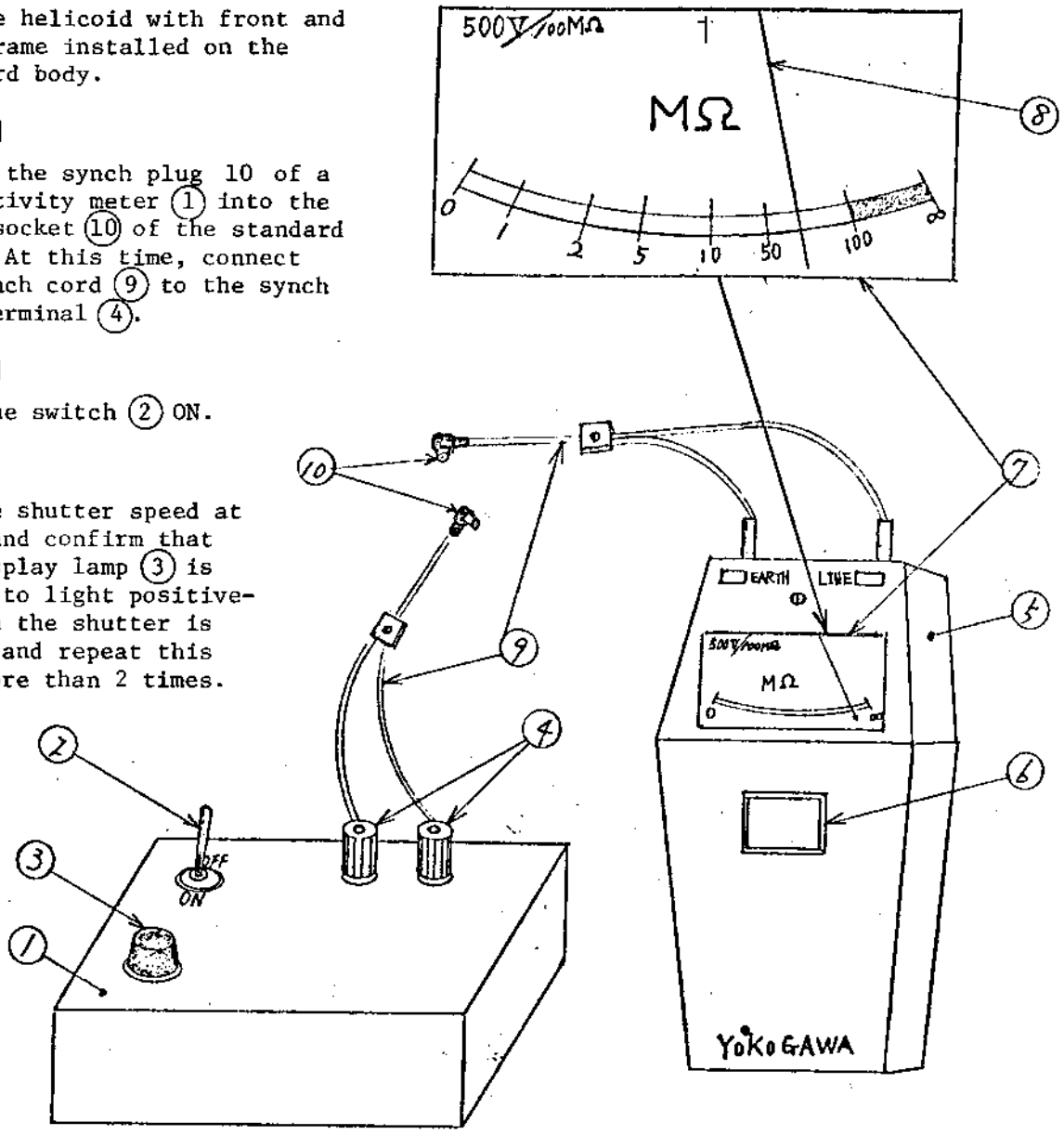
Insert the synch plug 10 of a conductivity meter (1) into the synch socket (10) of the standard body. At this time, connect the synch cord (9) to the synch cord terminal (4).

[Step 3]

Turn the switch (2) ON.

[Step 4]

Set the shutter speed at 1/500 and confirm that the display lamp (3) is caused to light positively when the shutter is pushed and repeat this test more than 2 times.



5	Insulation meter 500V/200MΩ	10	Synch plug
4	Synch cord terminal	9	Synch cord
3	Display lamp	8	Indicator needle
2	Synch conductivity meter switch	7	Insulation meter
1	Synch conductivity meter	6	Switch

PROCESS: Inspection of helicoid installed with front rear frame

JOB : Inspection of synch, conductivity and insulation

[Step 5]

Disconnect the synch plug (10) of the conductivity meter (1) from the synch socket of the standard body, and set the synch plug (10) of the insulation meter (5) into the synch socket of the standard body.

[Step 6]

Open the switch (6) of the insulation meter (5).

[Step 7]

Set the shutter speed at 1 sec., and confirm that the indicated values of the needle (8) within the insulation meter (7) must be as follows:

Before shutter is pushed	Insulation resistance more than	50MΩ (50MΩ~∞)
While shutter in operation	"	0MΩ
After shutter operated		50MΩ (50MΩ~∞)

[Step 8]

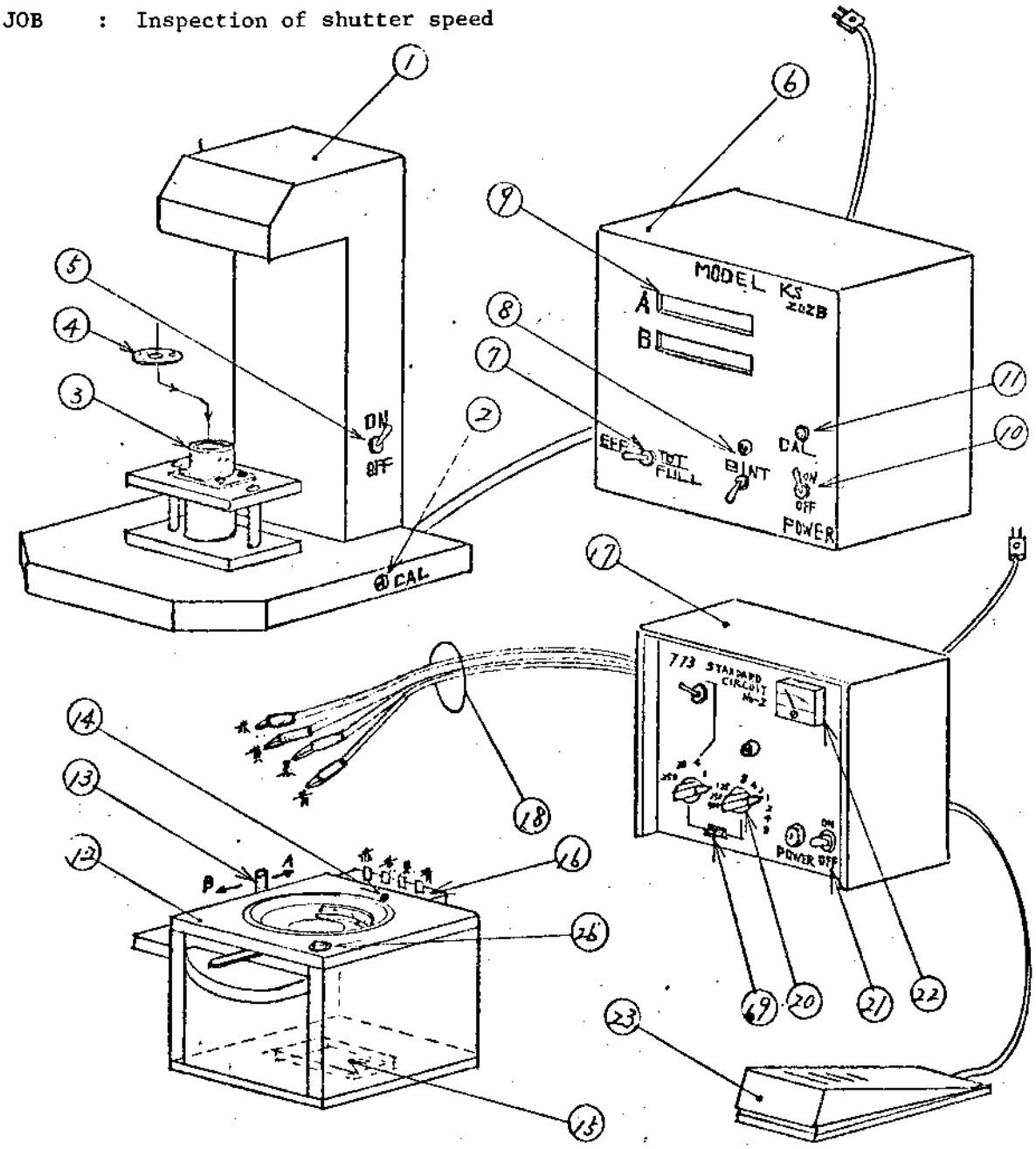
Confirm that the needle (8) of the insulation meter (5) is between 50MΩ and ∞ when the helicoid with front and rear frame installed is moved forward or backward.

Note: o Use a conductivity meter manufactured by Bronica.
o Use an insulation meter of 500V, 100M (200MΩ) manufactured by Yokogawa.

ORDER NO.

PROCESS: Inspection of helicoid installed with front rear frame

JOB : Inspection of shutter speed



9	Measured value display window	18	Connection cord
8	Switch	17	Standard pulse generator for shutter speed
7	Switch	16	Lens shutter inspection jig terminal
6	Shutter tester Model KS202B	15	Guide hole
5	Guide hole	14	Mark
4	Minimum aperture ring	13	Operating lever
3	CT-354 Lens shutter speed inspection jig B	12	CT-354 Lens shutter inspection jig A
2	Calibrate adjusting screw	11	Calibrate display lamp
1	Shutter tester Model KS202B	10	Switch

ORDER NO.

PROCESS: Inspection of helicoid installed with front rear frame

JOB : Inspection of shutter speed

[Step 1]

Turn the power switch (5) and (10) of the shutter tester Model KS202B (1), (6) ON.

[Step 2]

Install a lens shutter speed inspection tool (3) on the shutter tester (1), and set a minimum opening aperture ring (4) in the tool.

[Step 3]

Place a lens shutter speed inspection tool (12) over the lens shutter speed inspection tool (3) and at this time use the guide hole (15).

[Step 4]

Connect group of connecting cords (18) of a shutter speed standard pulse generator (17) to terminals (16) of the lens shutter speed inspection tool (12) in such a manner blue to blue, black to black, yellow to yellow and red to red.

[Step 5]

Set the switch (7) to the left, switch (8) to downward, switch (19) to the right, and switch (21) on.

[Step 6]

Move the operating lever (13) of the lens shutter speed inspection tool (12) in the direction of A to its extreme end, set the helicoid with front and rear frame installed, with its index mark adjusted to the mark (14) of the lens shutter speed inspection tool (12).

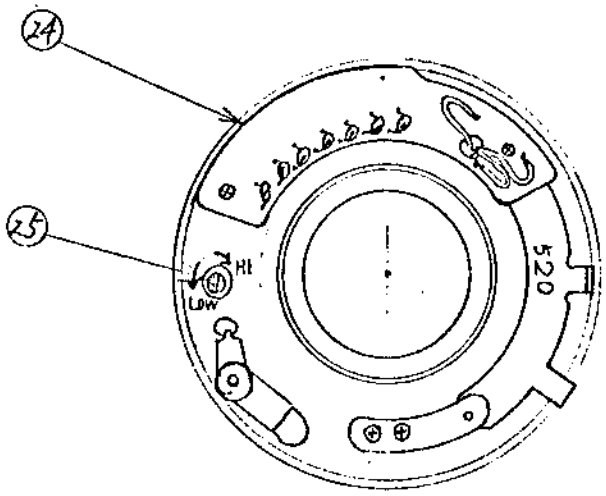


Fig. 2

Table 1

Shutter speed	Range (m sec.)
1/500	2.67 ∿ 1.43
1/250	5.34 ∿ 2.86
1/125	10.7 ∿ 5.72
1 sec.	1366 ∿ 732

23	Foot switch					
22	Voltage display meter	1				
21	Switch	1		26	Lens release	
20	Speed indicating dial	1		25	Speed adjusting screw	1
19	Switch	1		24	Shutter unit	1

PROCESS: Inspection of helicoid installed with front rear frame

JOB : Inspection of shutter speed

[Step 7]

Set the diaphragm of the helicoid with front and rear frame installed at the full opening (In the case of 75mm standard lens, F 2.8).

[Step 8]

Move the operating lever (13) to the position of A, and cause the calibrate display lamp (11) to light by rotating the calibrate adjusting screw (2).

[Step 9]

In the subsequent operations, cause the shutter to operate by shifting the operating lever (13) in the direction of A or B.

[Step 10]

The measurement of shutter speed is performed at 4 types of speed, 1/500, 1/250, 1/125 and 1 sec. At this time, set the speed indicating dial (20) to each of those speeds and the shutter must be operated more than 3 times at each speed, and confirm that measured values are within the range shown in Table 1. At this time, the voltage display meter (22) should indicate 6V. Measured values are digitally indicated in the display window(9).

[Step 11]

The voltage display meter (22) indicates 4V when the foot switch (23) is pressed. Confirming it indicates 4V, make measurement in the same manner as Step 10 and confirm shutter speeds.

[Step 12]

In case a high speed shutter is deviated from the range, it can be somewhat adjusted by rotating the speed adjusting screw (25). In this case, speed becomes faster when rotated to the right, and becomes slower when turned to the left.

Note: The screw should be lightly rotated to the left or right without applying undue force.

ORDER NO.

PROCESS: Assembly of lens (1)

JOB : Mounting of front lens group, rear group and name ring

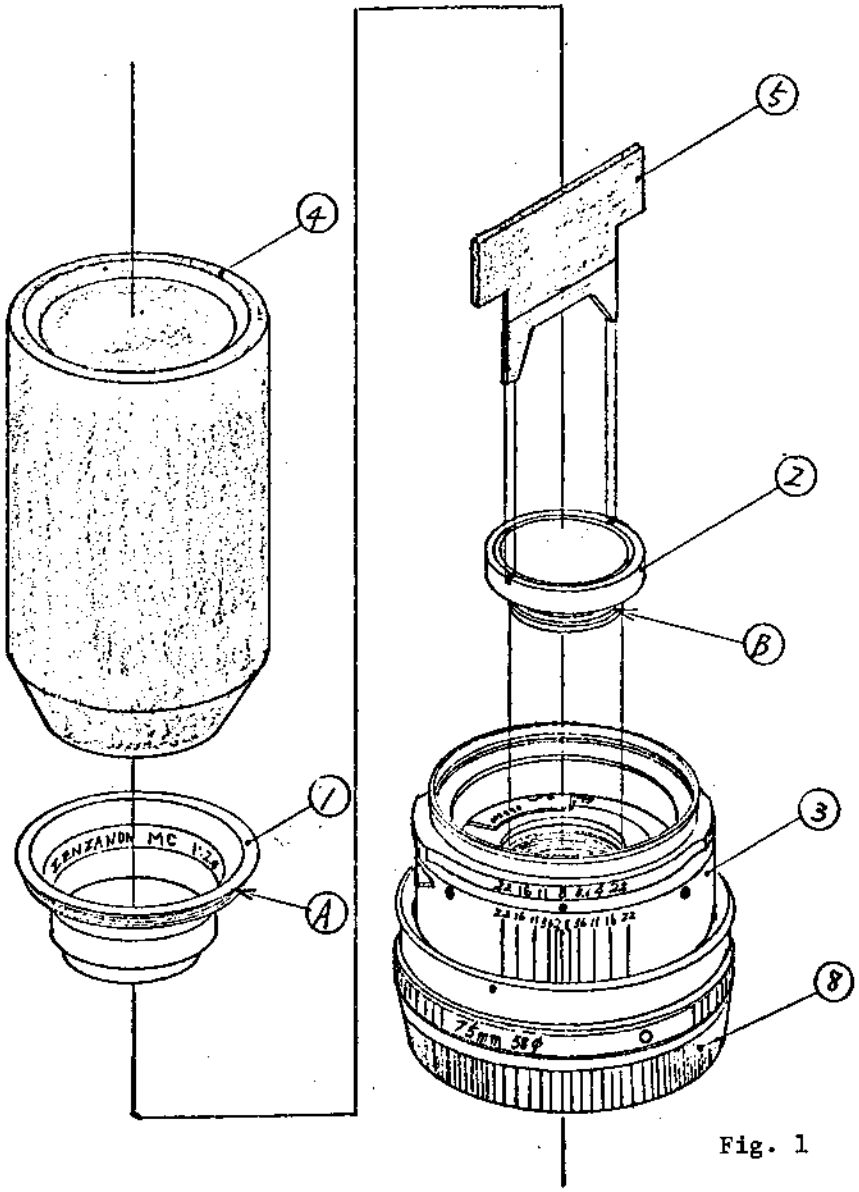


Fig. 1

5	1-210180AJ Lens front group pin face	1			
4	1-210482AJ Name ring installing jig	1			
3	1710100 Helicoid with front and rear frame installed		8	1242602 Rear cap	
2	1210180 Lens front group		7	1-210180AJ Lens rear group pin face	1
1	1210482 Name ring		6	1210180 Lens rear group	

ORDER NO.

PROCESS: Assembly of lens

JOB : Mounting of front lens group, rear group and name ring

[Step 1]

Check the front lens group (2) and rear group (6) for any scratch, air bubble, dirt, stain, etc. and clean them with ether-mixed alcohol.

[Step 2]

Apply grease at the threaded portion (B) of the front lens group (2) and screw it securely into the helicoid with front and rear frame installed (3) by using a pin face wrench (5).

Note: At this time, be sure to install a rear cap (8) on the lens.

[Step 3]

Apply grease to the threaded portion (A) of the name ring (1) and then screw the ring securely into the helicoid with front and rear frame installed (3) by using a jig for mounting name ring (4). Fig. 1

[Step 4]

Apply grease to the threaded portion (C) of the rear lens group (6) and then screw it into the helicoid with front and rear frame installed (3) by using a pin-face wrench (7). Fig. 2

Note: o In screwing the rear lens group, (6) care should be exercised not to damage the threaded portion of both lens side and shutter side since they are made of aluminum.

o The lens must be securely screwed into the position with designated grease coated on its threaded portion.

As grease for the lens, ROJIMORU #4019 should be used.

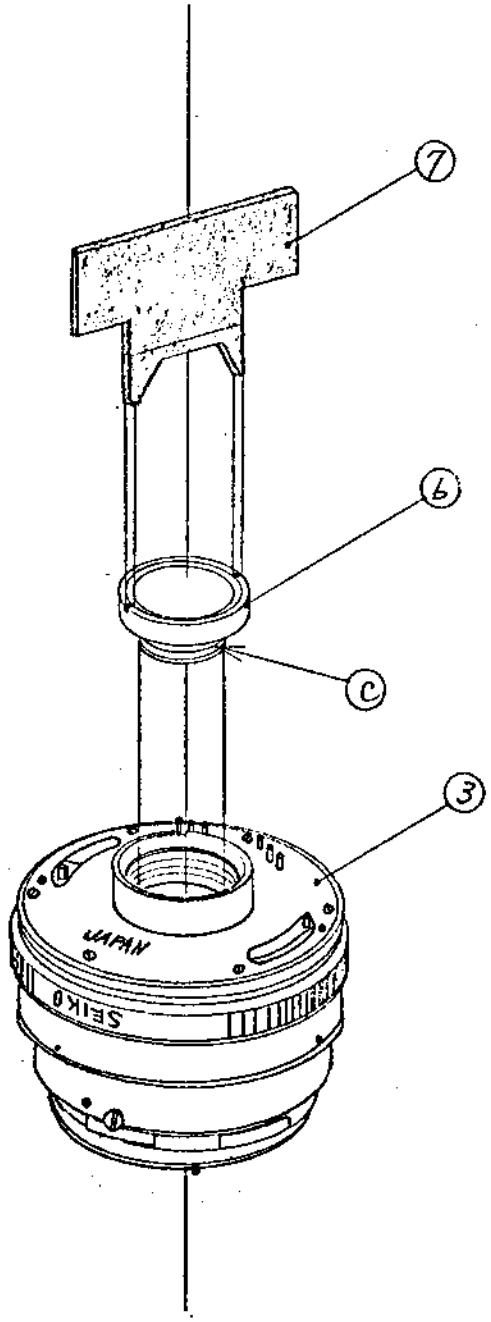


Fig. 2

ORDER NO.

PROCESS: Mechanical focus adjustment of assembly of lens (1)

JOB : Mechanical focus adjustment

[Step 1]

Install the helicoid with lens assembled (2) on the mount for measuring FB (1). In this case, first adjust the index mark (8) of the helicoid (2) to the mark (7) of the mount (1), and then set the helicoid by turning it counterclockwise.

[Step 2]

Loosen 3 scale ring set screws (9) by turning it for a half turn.

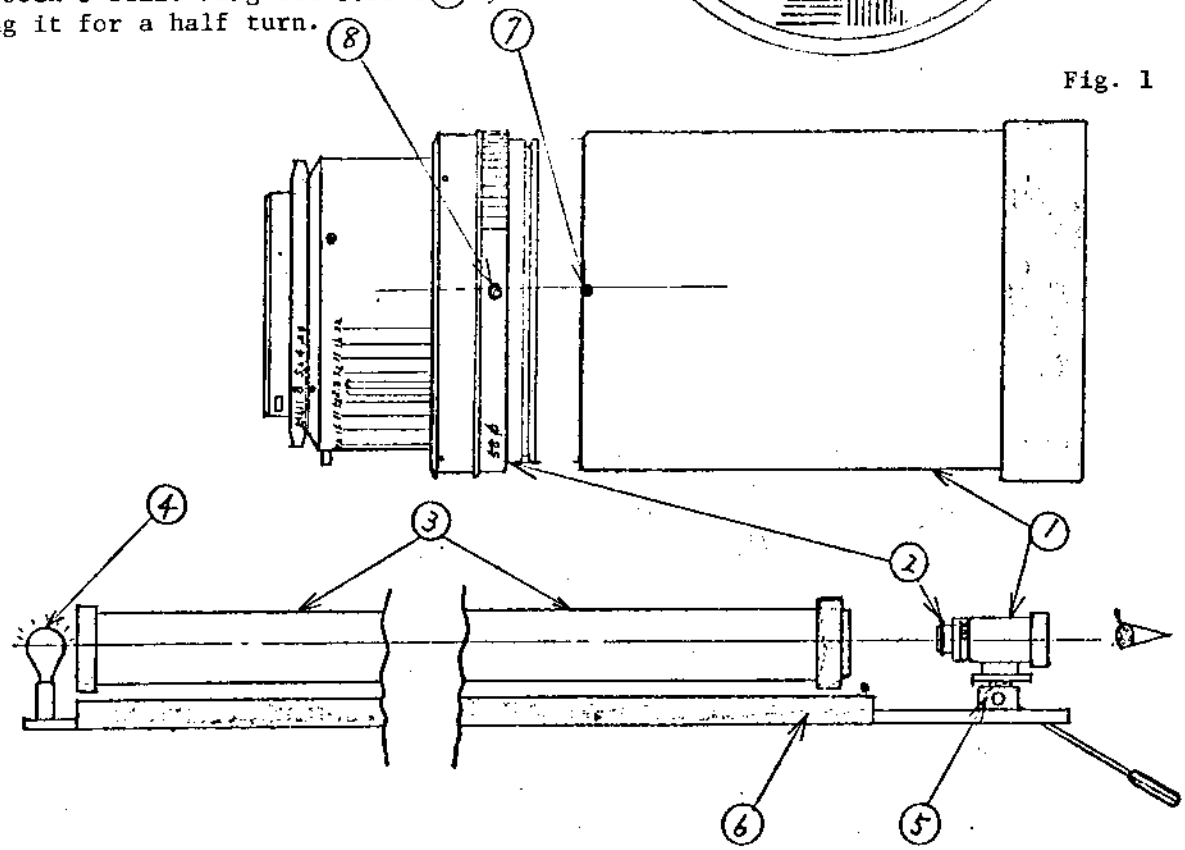


Fig. 1

9	1210272	Scale ring set screw			
8	1210240	Bayonet ring index	17	1210022	Helicoid intermediate cylinder
7		Mark	16	1710141	T change-over ring
6		Collimator mount	15	1210335	Aperture ring
5		Tripod pan head	14	1210531	Light-tight ring
4		Light source	13	1710210	Shutter unit
3		Collimator	12	1210295	Depth of field scale ring
2	1710010	Helicoid with lens	11	1710170	Manual lever set
1	CT351	Mount for measuring FB	10	1210252	Helicoid scale ring

ORDER NO.

PROCESS: Mechanical focus adjustment of assembly of lens (2)

JOB : Mechanical focus adjsutment

[Step 3]

Turn the switch of light source (4) on and then adjust the pan head (5) so as to have the center of mount for measuring FB (1) come to the light axis of the collimator (3) and fix it.

[Step 4]

Apply lightly a loupe (22x) against the ground glass of the mount for measuring FB, and adjust the helicoid scale ring (10) to a position where No.4 can be seen most clearly by rotating it together with the intermediate cylinder of the helicoid while lightly holding it.

[Step 5]

After adjusting it to No.4 rotate the helicoid scale ring (10) alone counterclockwise until it comes to a stop, and then tighten and fix scale ring mounting screws (9), and then confirm again that it is adjusted to No.4. After that, lightly apply screwlock (threebond) over the portion of A in Fig. 3.

Note: o In fixing the helicoid scale ring, (10) care should be exercised not to warp the ring or not to tighten it too hard.

o Such units which are hard to be mechanically focus adjusted by means of collimator should be treated as poor resolution unit.

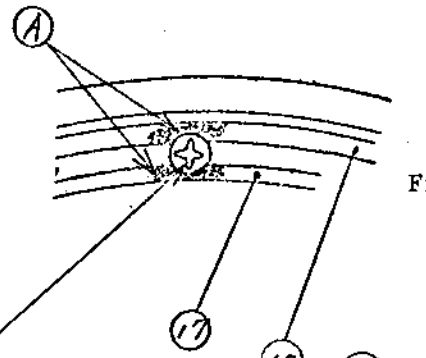


Fig. 3

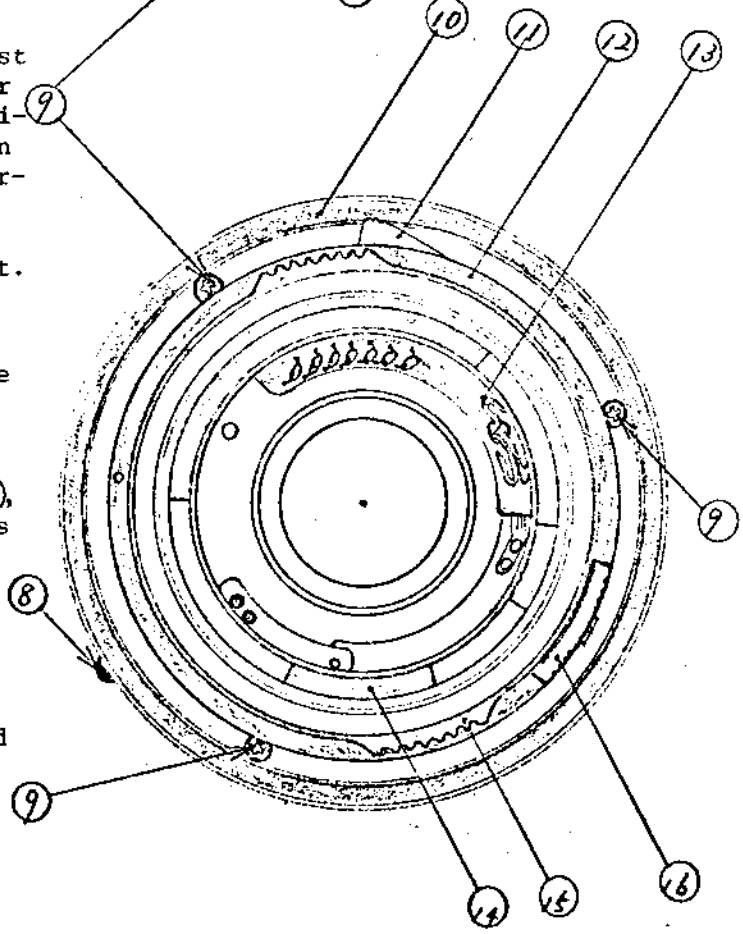


Fig. 4

ORDER NO.

PROCESS: Completed 75mm lens (1)

JOB : Mounting of helicoid scale and leatherette

[Step 1]

Rotate the helicoid scale ring (4) counter-clockwise until it comes to a stop, and at that point, install a rear cap (6) over the unit.

[Step 2]

Have the helicoid scale (2) slid into between the depth of field scale ring (7) and helicoid scale ring (4) and adjust them so as to have the center of infinite mark on the helicoid scale (2) and the green line of F2.8 of depth of field scale ring aligned with the datum line as shown in Fig. 2, and fix them lightly at one point by means of a set screw (5). At this time, apply locktite to the set screw. (The screw must be slightly below the surface.)

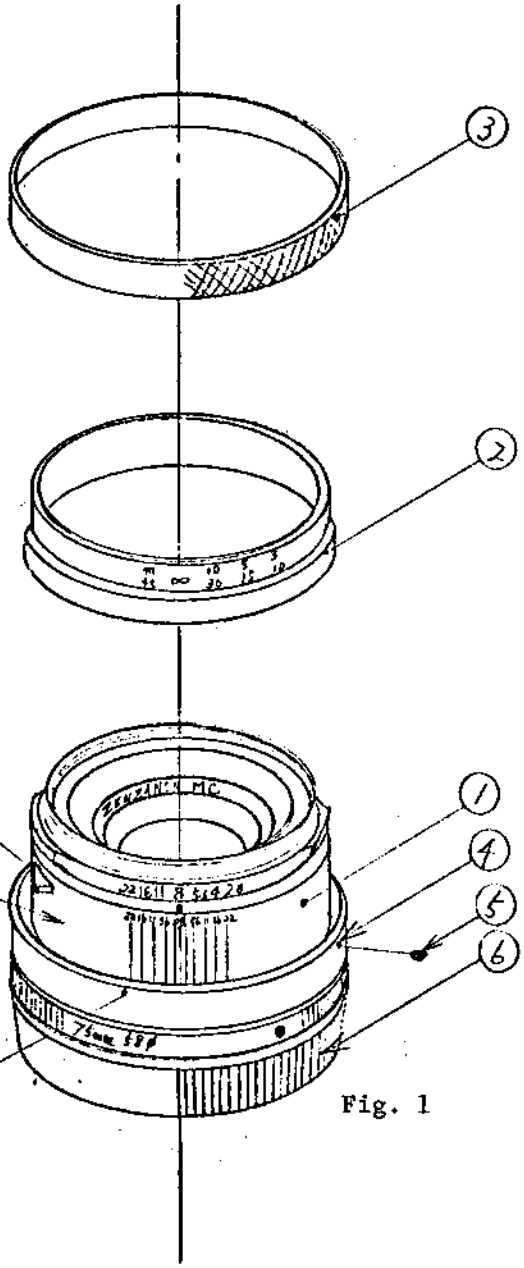


Fig. 1

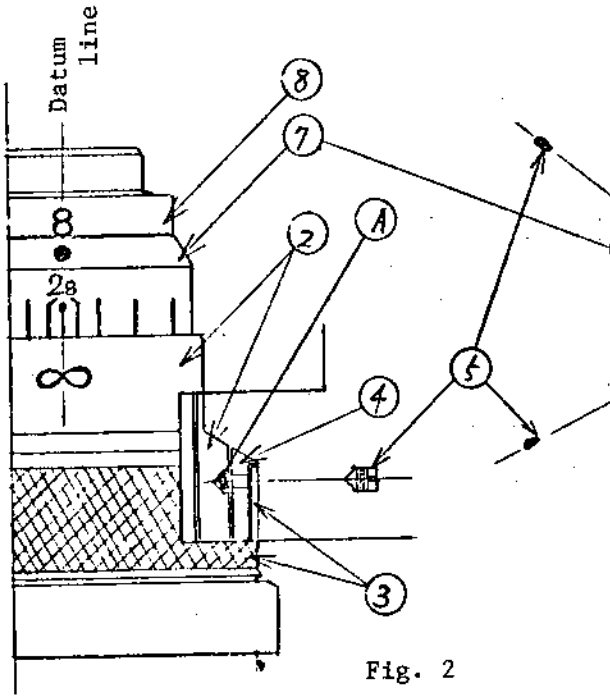


Fig. 2

5	5063026	Set screw	3				
4	1210252	Helicoid scale ring	1				
3	1210512	Leatherette	1	8	1210335	Aperture ring	1
2	1210284	Helicoid scale	1	7	1210295	Depth of field scalr ring	1
1	1710010	Helicoid with lens mounted	1	6	1242602	Rear cap	1

PROCESS: Completed 75mm lens

JOB : Mounting of helicoid scale and leatherette

[Step 3]

Drill 2 holes large enough to accommodate the tip of set screw (5) on the helicoid scale with the tap hole of the helicoid scale ring used as guide by using a hand drill of which blade angle is 90°.

[Step 4]

Tighten set screws (5) at 2 places with locktite applied with care exercised not to deform the helicoid scale (2).

[Step 5]

Place a piece of leatherette over the groove of the helicoid scale ring (4) with care exercised not to have the edge of leatherette (3) extended from the helicoid scale ring (4).

[Step 6]

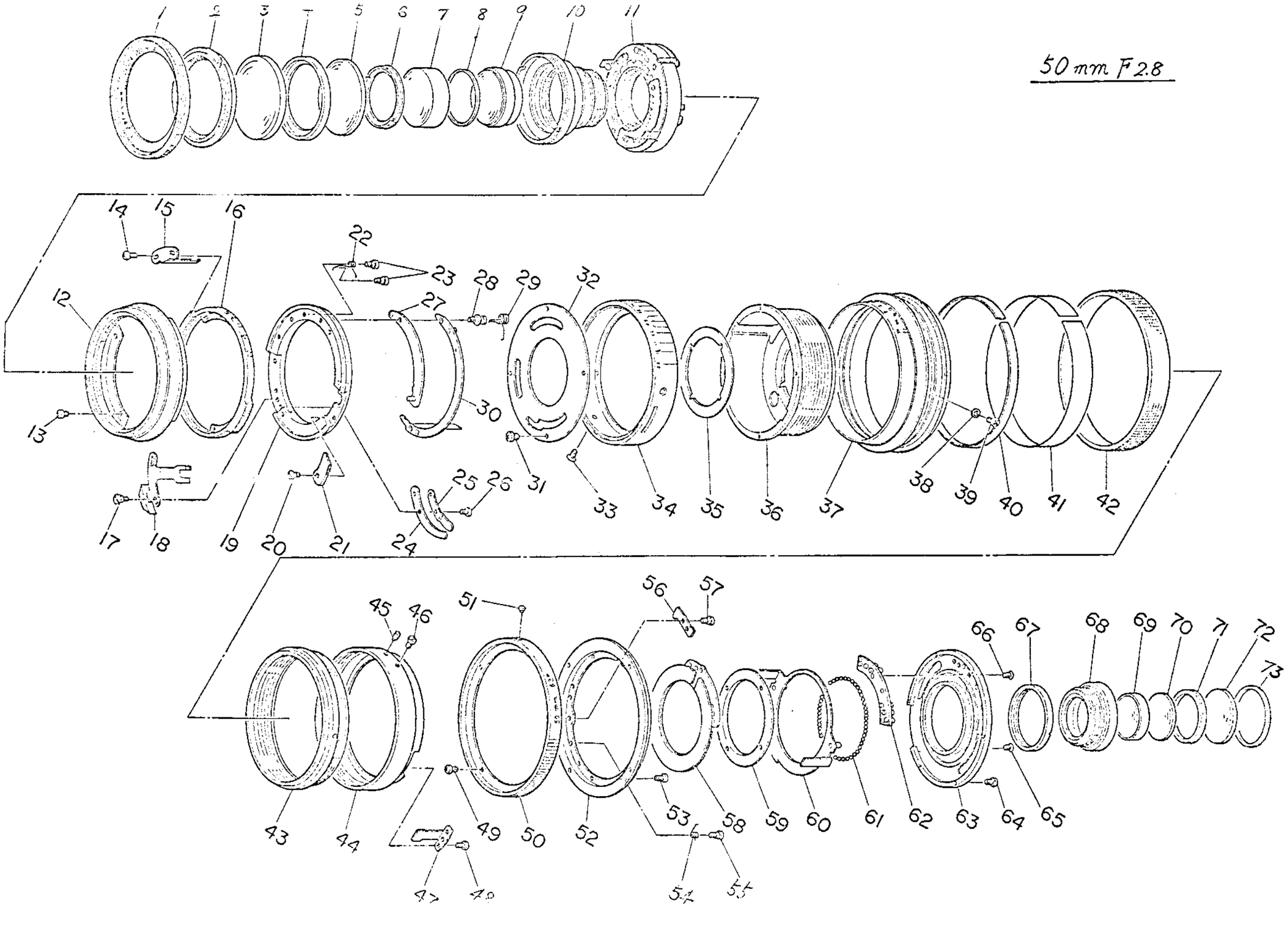
Lightly paste together the leatherette (3) and the helicoid scale ring (4) wind bond (diabond 1880C). Bond should be spread over the entire circumference.

ETR / ZENZANON Lenses

40 · 50 · 150mm

Parts Lists & Repair Manuals

50 mm F2.8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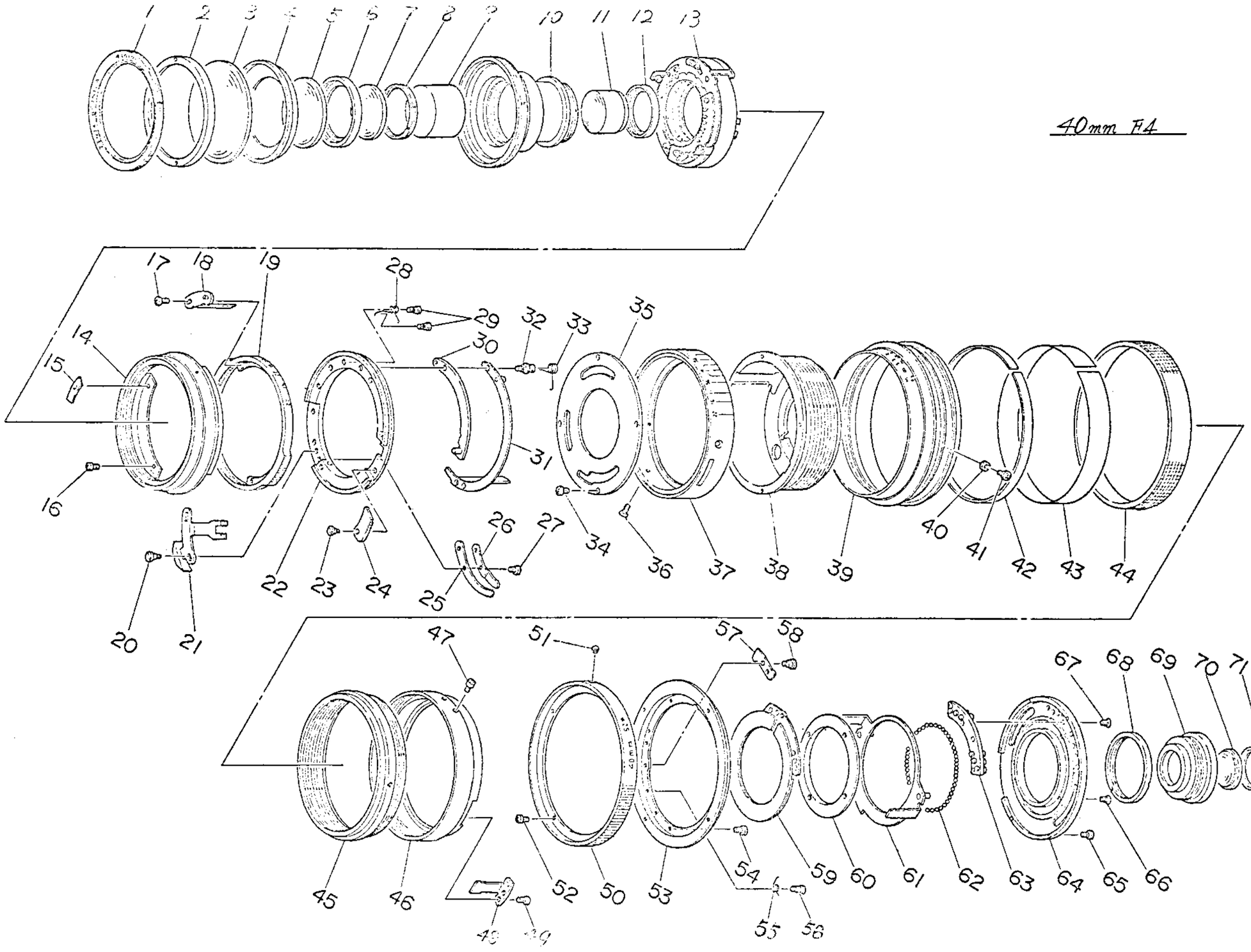
1145 (F2.8 / 50mm)

Index	Parts No.	Parts Name	Q'ty
1	1145-6	Name ring	1
2	1145-2	Front lens holder	1
3	G-1	Lens	1
4	1140-5	G1 · 2 spacer ring	1
5	G-2	Lens	1
6	1140-6	G3 holder	1
7	G-3	Lens	1
8	1145-3	G3 · 4 spacer ring	1
9	G-4·5	Lens	1
10	1145-1	Front lens frame	1
11	1145-817	Shutter	1
12	1144-36	Filter ring	1
13	1PM 1.7 x 4	Pan head small screw	4
14	3PM 1.7 x 3	Pan-head small screw	4
15	1144-3.8	Diaphragm fork	2
16	1145-8	Aperture ring	1
17	1144-34	T lever axis	2
18	1142-32	T change-over fork	1
19	1144-16	Relay ring	1
20	1144-31	Manual lever axis	1
21	1144-30	Manual lever	1
22	1144-26	Opening spring	1
23	1144-24	Spring axis	2
24	1144-28	Lever base plate	1
25	1144-29	Lever holding plate	1
26	3PM 1.7 x 4	Pan-head small screw	2
27	1144-17	Lever	1
28	1144-23	Lever axis	1
29	1144-27	Auxiliary spring	1
30	1144-20	C lever	1
31	1PM 1.7 x 3	Pan-head small screw	4
32	1144-25	Light-tight plate	1
33	1FM 1.7 x 3.5	Countersunk small screw	3
34	1145-10	Depth of field scale ring	1
35	1145-5	Shutter washer	1
36	1144-5	Inner cylinder	1
37	1145-7	Distance ring	1

Index	Parts No.	Parts Name	Q'ty
38	1144-11	Washer	3
39	1PM 1.7 x 3	Pan-head small screw	3
40	1144-12	Cover plate	1
41	1144-58	Tape	1
42	1144-13	Rubber knurling ring	1
43	1144-6	Helicoid female	1
44	1144-7	Master screw	1
45	NV 1.7 x 2.5	Fixing screw	1
46	1144-9	Stopper	1
47	1144-8	Key	2
48	1PM 1.7 x 3	Pan-head small screw	6
49	1PM 1.4 x 3	Pan-head small screw	4
50	1145-9	Bayonet ring	1
51	1144-43	Bayonet ring index	1
52	1144-41	Bayonet	1
53	1PM 1.7 x 4	Pan-head small screw	4
54	1144-51	Lock leaf spring	1
55	1144-50	Spring holder screw	1
56	1144-48	Set ring lock plate	1
57	1144-49	Lock plate axis	1
58	1144-52·53	Flexible printed board	1
59	1144-45	Set ring holder	1
60	1144-46	Set ring	1
61	1101-49	Steel ball	85
62	1144-54	Contact piece insulating plate	1
63	1144-44	Set ring base plate	1
64	1PM 1.7 x 3	Pan-head small screw	6
65	1FM 1.7 x 3	Countersunk small screw	4
66	B-tight 1FM 1.7 x 3	Countersunk small screw	4
67	1144-15	Shut clamp ring	1
68	1145-4	Rear lens frame	1
69	G-6	Lens	1
70	G-7	Lens	1
71	1140-8	Rear lens spacer ring	1
72	G-8	Lens	1
73	1140-9	Rear lens holder	1

40mm F4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1144 (F4 / 40mm)

Index	Parts No.	Parts Name	Q'ty
1	1144-40	Name ring	1
2	1144-2	Front lens holder	1
3	G-1	Lens	1
4	1139-5	G1, 2 space ring	1
5	G-2	Lens	1
6	1139-6	G2, 3 space ring	1
7	G-3	Lens	1
8	1139-7	G4 holder	1
9	G-4	Lens	1
10	1144-1	Front lens frame	1
11	G-5 · 6	Lens	1
12	1144-3	G6 holder	1
13	1144-816	Shutter	1
14	1144-36	Filter ring	1
15	1144-39	Limit plate	1
16	1PM 1.7 x 4	Pan-head small screw	4
17	3PM 1.7 x 3	Pan-head small screw	4
18	1144-38	Diaphragm fork	2
19	1144-37	Aperture ring	1
20	1144-34	T lever axis	2
21	1144-32	T change-over fork	1
22	1144-16	Relay ring	1
23	1144-31	Manual lever axis	1
24	1144-30	Manual lever	1
25	1144-28	Lever base plate	1
26	1144-29	Lever holding plate	1
27	3PM 1.7 x 4	Pan-head small screw	2
28	1144-26	Opening spring	1
29	1144-24	Spring axis	2
30	1144-17	Lever	1
31	1144-20	C lever	1
32	1144-23	Lever axis	1
33	1144-27	Auxiliary spring	1
34	1PM 1.7 x 3	Pan-head small screw	4
35	1144-25	Light-tight plate	1
36	1FM 1.7 x 3.5	Pan-head small screw	3
37	1144-14	Depth of field scale ring	1

Index	Parts No.	Parts Name	Q'ty
38	1144-5	Cylinder	1
39	1144-10	Distance ring	1
40	1144-11	Washer	3
41	1PM 1.7 x 3	Pan-head small screw	3
42	1144-12	Cover plate	1
43	1144-58	Tape	1
44	1144-13	Rubber knurling ring	1
45	1144-6	Helicoid female	1
46	1144-7	Master screw	1
47	1144-9	Stopper	2
48	1144-8	Key	2
49	1PM 1.7 x 3	Pan-head small screw	6
50	1144-42	Bayonet ring	1
51	1144-43	Bayonet ring index	1
52	1PM 1.4 x 3	Pan-head small screw	4
53	1144-41	Bayonet	1
54	1PM 1.7 x 4	Pan-head small screw	4
55	1144-51	Lock leaf spring	1
56	1144-50	Spring holding screw	1
57	1144-48	Set ring lock plate	1
58	1144-49	Lock plate axis	1
59	1144-52 · 53	Flexible printed circuit board	1
60	1144-45	Set ring holder	1
61	1144-46	Set ring	1
62	1101-49	Steel ball	85
63	1144-54	Contact piece insulating plate	1
64	1144-44	Set ring base plate	1
65	1PM 1.7 x 3	Pan-head small screw	6
66	1FM 1.7 x 3	Pan-head small screw	4
67	B-tight 1FM 1.7 x 3	Pan-head small screw	4
68	1144-15	Shutter clamp ring	1
69	1144-4	Rear lens frame	1
70	G-7 · 8	Lens	1
71	1139-10	Rear lens space ring	1
72	G-9	Lens	1
73	1139-11	Rear lens holder	1

o 40mm F4 Zenzanon shutter unit replacing procedure

[Step 1]

Remove the name ring (2) with a name ring mounting jig (1).

[Step 2]

Remove the front lens (3) with a flexible pin-face wrench.

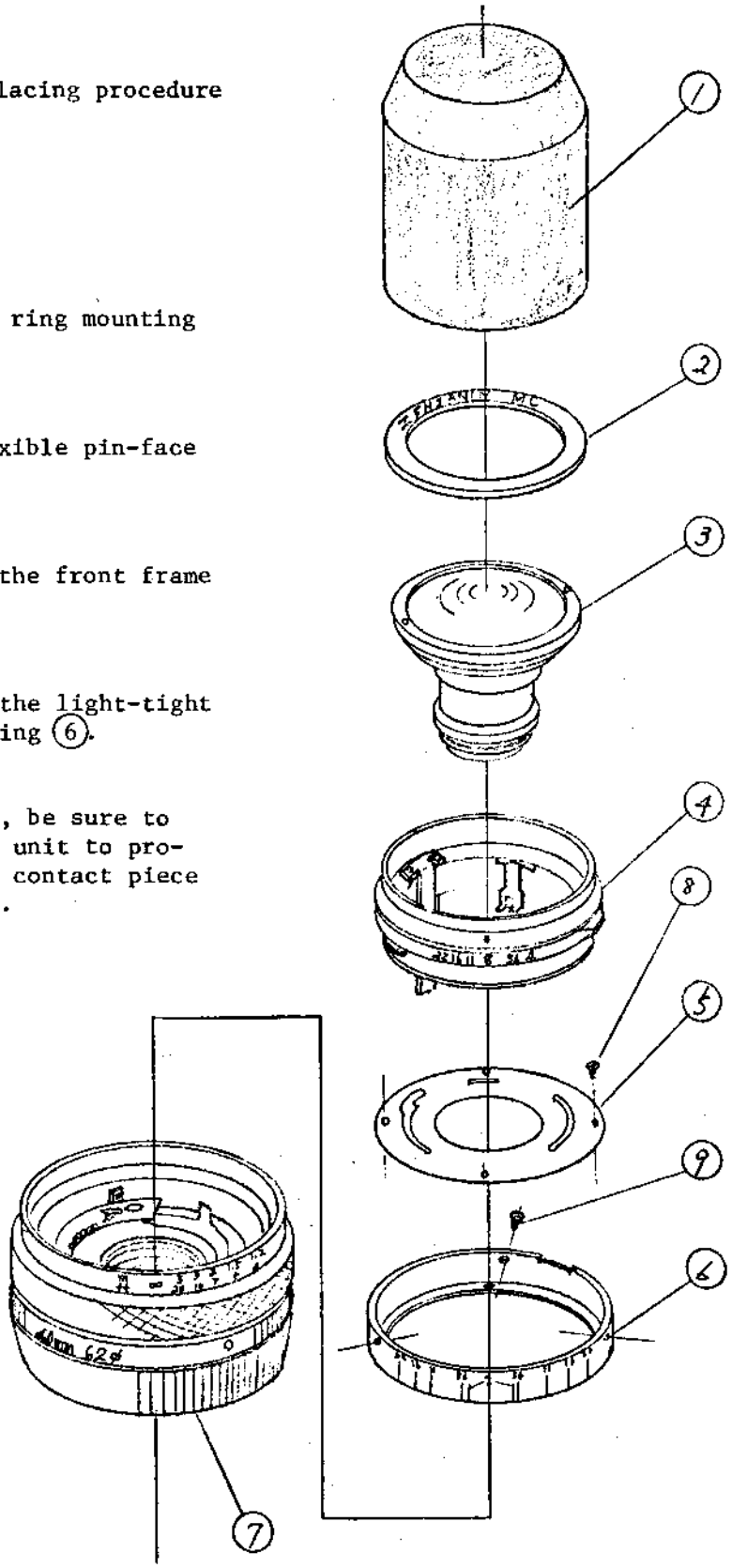
[Step 3]

Remove 3 screws 9 and then remove the front frame unit (4).

[Step 4]

After removing 4 screws (8), remove the light-tight plate (5) and depth of field scale ring (6).

Note: In performing the above work, be sure to place a rear cap (7) over the unit to protect the shutter contact and contact piece insulating plate from damage.



9	1FM 1.7 x 3.5	Countersunk small screw
8	1PM 1.7 x 3	Panheas small screw
7	1-242602	Rear cap
6	1144-14	Depth of field scale ring
5	1144-25	Light-tight plate
4		Front frame unit
3		Front lens
2	1144-40	Name ring
1	1-210482AJ	Name ring mounting jig

[Step 5]

After removing 6 screws (1), remove the set ring unit (2).

[Step 6]

Remove the rear lens (4).

[Step 7]

Remove solder of the contact piece insulating plate (3) and shutter.

[Step 8]

After removing the shutter clamp ring (5), remove the shutter.

[Step 9]

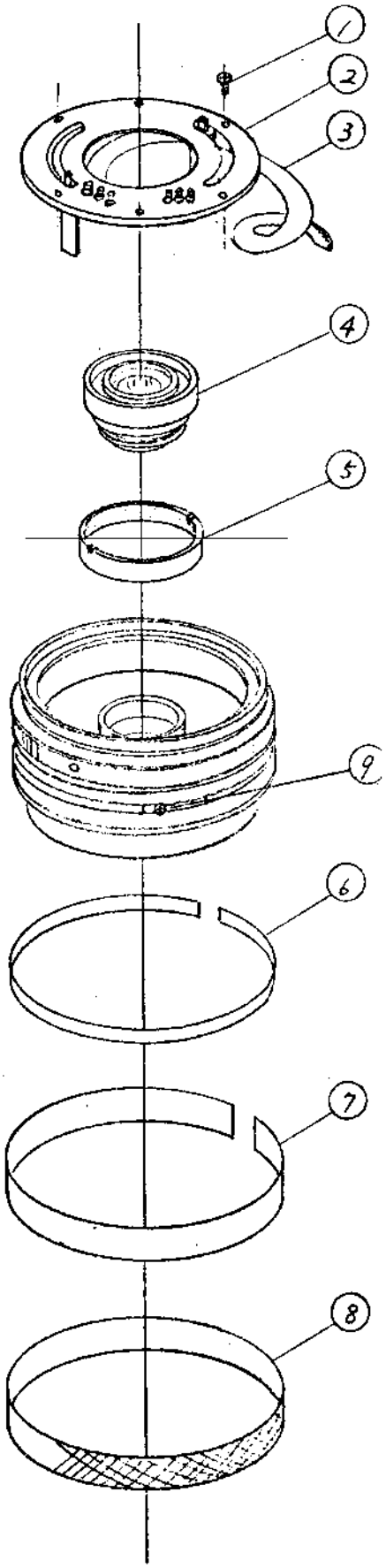
After replacing the shutter, assemble the unit in performing steps in reverse order.

[Step 10]

Upon completion of assembly, remove the rubber knurling ring (8), tape (7) and cover plate (6) and loosen screws 9 and perform mechanical focus adjustment of the unit.

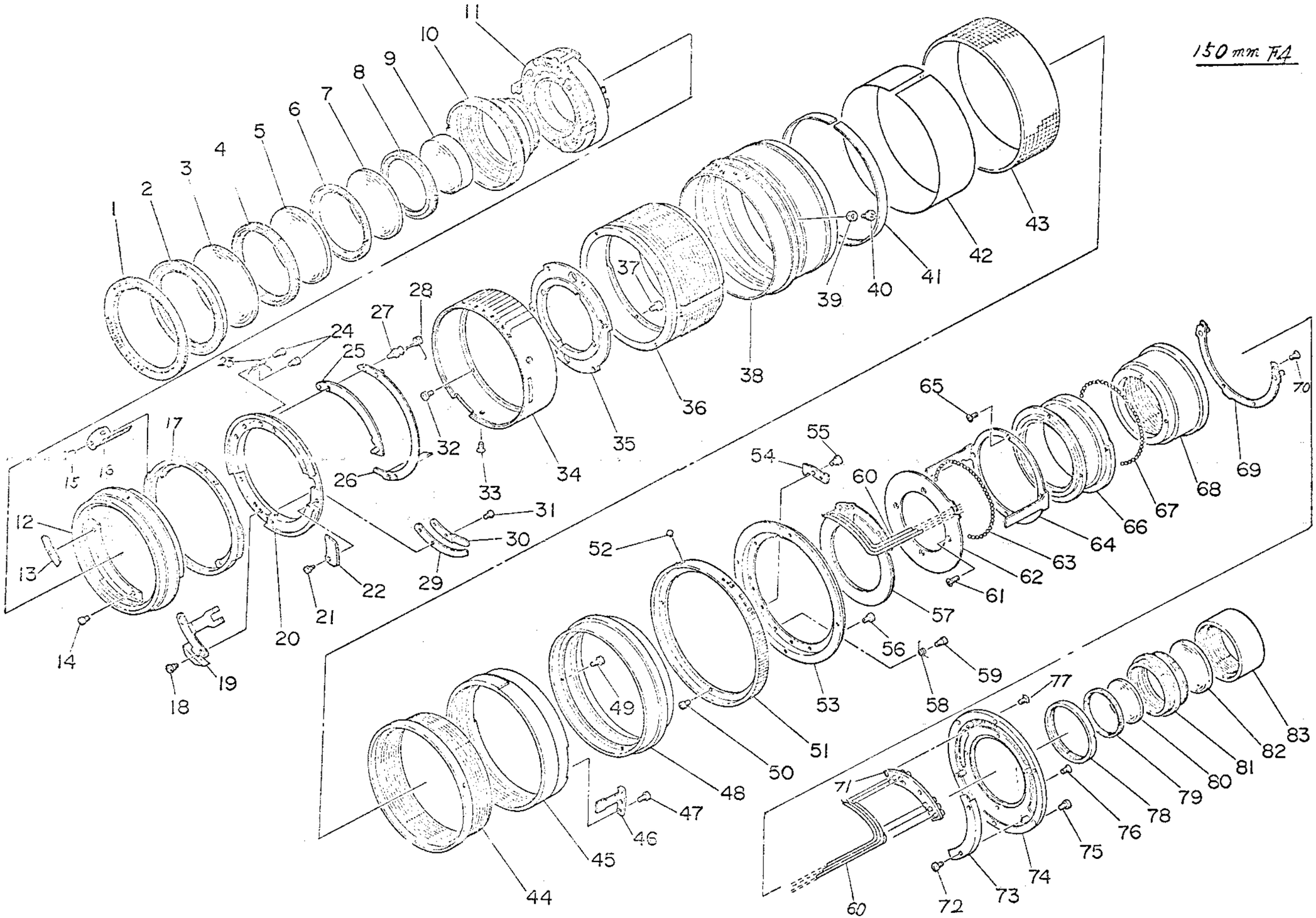
[Step 11]

After completing mechanical focus adjustment, install the rubber knurling ring (8), tape (7) and cover plate (6) and complete the work.



9	1PM 1.7 x 3	Pan-head small screw
8	1144-13	Rubber knurling ring
7	1144-58	Tape
6	1144-12	Cover plate
5	1144-15	Shutter clamp ring
4		Rear lens
3	1-710260	Contact piece insulating plate set
2		Set ring unit
1	1PM 1.7 x 3	Pan-head small screw

150 mm FA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Index	Parts No.	Parts Name	Q'ty
1	1147-19	Name ring	1
2	1147-2	Front lens holder	1
3	G-1	Lens	1
4	1143-5	Front lens space ring	1
5	G-2	Lens	1
6	1143-6	G3 holder	1
7	G-3	Lens	1
8	1147-3	G3, 4 space ring	1
9	G-4	Lens	1
10	1147-1	Front lens frame	1
11	1147-818	Shutter	1
12	1147-17	Filter-ring	1
13	1144-39	Limit plate	1
14	1PM 1.7 x 4	Pan-head small screw	4
15	3PM 1.7 x 3	Pan-head small screw	4
16	1147-18	Diaphragm fork	2
17	1144-37	Aperture ring	1
18	1144-34	T lever axis	2
19	1147-16	T change-over fork	1
20	1144-16	Relay ring	1
21	1144-31	Manual lever axis	1
22	1144-30	Manual lever	1
23	1144-26	Opening spring	2
24	1144-24	Spring axis	1
25	1144-17	Lever	1
26	1144-15	Interconnected arm	1
27	1144-23	Lever axis	1
28	1144-27	Auxiliary spring	1
29	1144-28	Lever base	1
30	1144-29	Lever holding plate	1
31	3PM 1.7 x 4	Pan-head small screw	2
32	1PM 1.7 x 4	Pan-head small screw	4
33	1FM 1.7 x 3.5	Countersunk small screw	3
34	1147-14	Depth of field scale ring	1
35	1147-7	Shutter printed circuit board	1
36	1147-8	Helicoid male	1

Index	Parts No.	Parts Name	Q'ty
37	1PM 1.7 x 3.5	Pan-head small screw	4
38	1147-12	Distance ring	1
39	1144-11	Washer	3
40	1PM 1.7 x 3.5	Pan-head small screw	3
41	1144-12	Cover plate	1
42	1147-34	Tape	1
43	1147-13	Rubber knurling ring	1
44	1147-9	Helicoid female	1
45	1147-10	Master screw	1
46	1147-11	Key	2
47	1PM 1.7 x 3.5	Pan-head small screw	6
48	1147-20	Connecting ring	1
49	1FM 1.7 x 5	Pan-head small screw	4
50	1PM 1.4 x 3	Pan-head small screw	4
51	1147-33	Bayonet ring	1
52	1144-43	Bayonet index	1
53	1144-41	Bayonet	1
54	1144-48	Set ring lock plate	1
55	1144-49	Lock plate axis	1
56	1PM 1.7 x 4	Pan-head small screw	4
57	1144-52	Flexible printed circuit board	1
58	1144-51	Lock plate spring	1
59	1144-50	Spring holding screw	1
60	1147-30	Lead wire	1
61	1FM 1.7 x 3	Countersunk small screw	4
62	1147-23	Pole holder	1
63	1101-49	Steel ball	83
64	1147-26	Set ring plate	1
65	1FM 1.7 x 3	Countersunk small screw	4
66	1147-25	Set ring	1
67	1101-49	Steel ball	91
68	1147-22	Set ring holder	1
69	1147-24	Set ring knock plate	1
70	1FM 1.7 x 3	Countersunk small screw	4
71	1144-54	Contact piece insulating plate	1
72	3PM 1.4 x 2	Pan-head small screw	4

1147 (F4 / 150mm)

Index	Parts No.	Parts Name	Q'ty
73	1147-31	Light-tight plate	2
74	1147-21	Set ring base plate	1
75	1PM 1.7 x 3	Pan-head small screw	6
76	1FM 1.7 x 3.5	Countersunk small screw	4
77	B-tight 1FM 1.7 x 3	Countersunk small screw	4
78	1144-15	Shutter clamp ring	1
79	1147-5	G5 holder	1
80	G5	Lens	1
81	1147-4	Rear lens frame	1
82	G-6	Lens	1
83	1147-6	Rear lens holder	1

o 150mm F4 Zenzanon shutter unit replacing procedure

[Step 1]

Remove the name ring (2) with a name ring mounting jig (1).

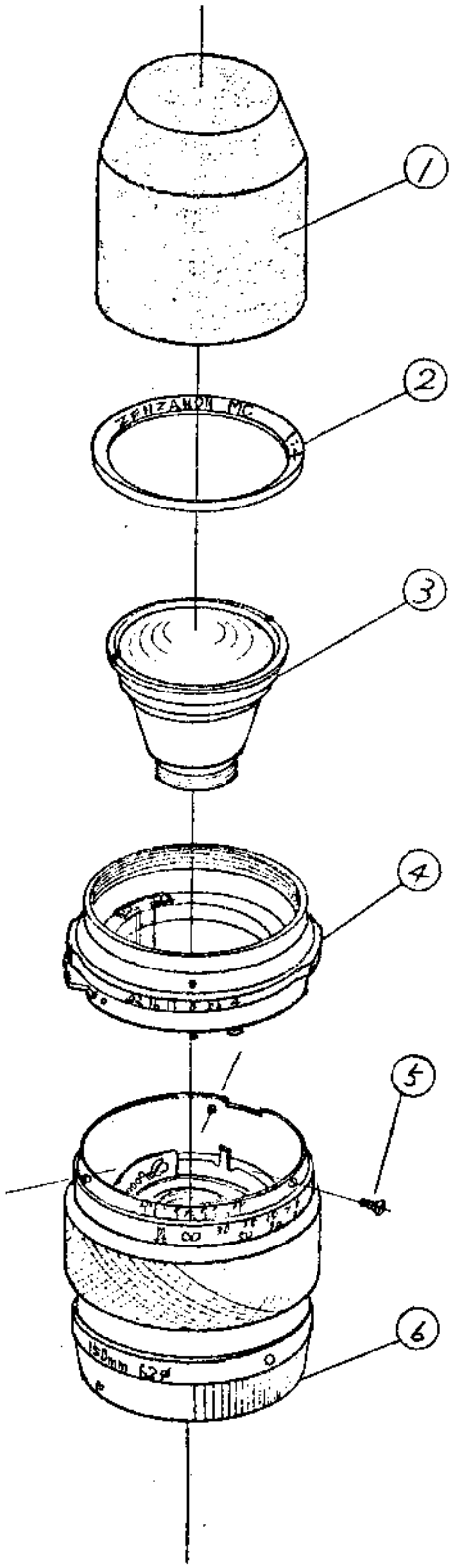
[Step 2]

Remove the front lens (3) with a flexible pin-face wrench.

[Step 3]

Remove 3 screws (5) and remove the front frame unit (4).

Note: At this time, be sure to put a rear cap (6) over the unit to protect the shutter contact and contact piece insulating plate from damage.



6	1-242602	Rear cap
5	1FM1.7 x 3.5	Countersunk small screw
4		Front frame unit
3		Front lens
2	1147-19	Name ring
1	1-210482AJ	Name ring mounting jig

[Step 4]

After removing 6 screws (1), remove the set ring unit (2).

[Step 5]

Remove the rear lens (4).

[Step 6]

Remove solder connecting the shutter cord and flexible printed circuit board (AA) (3).

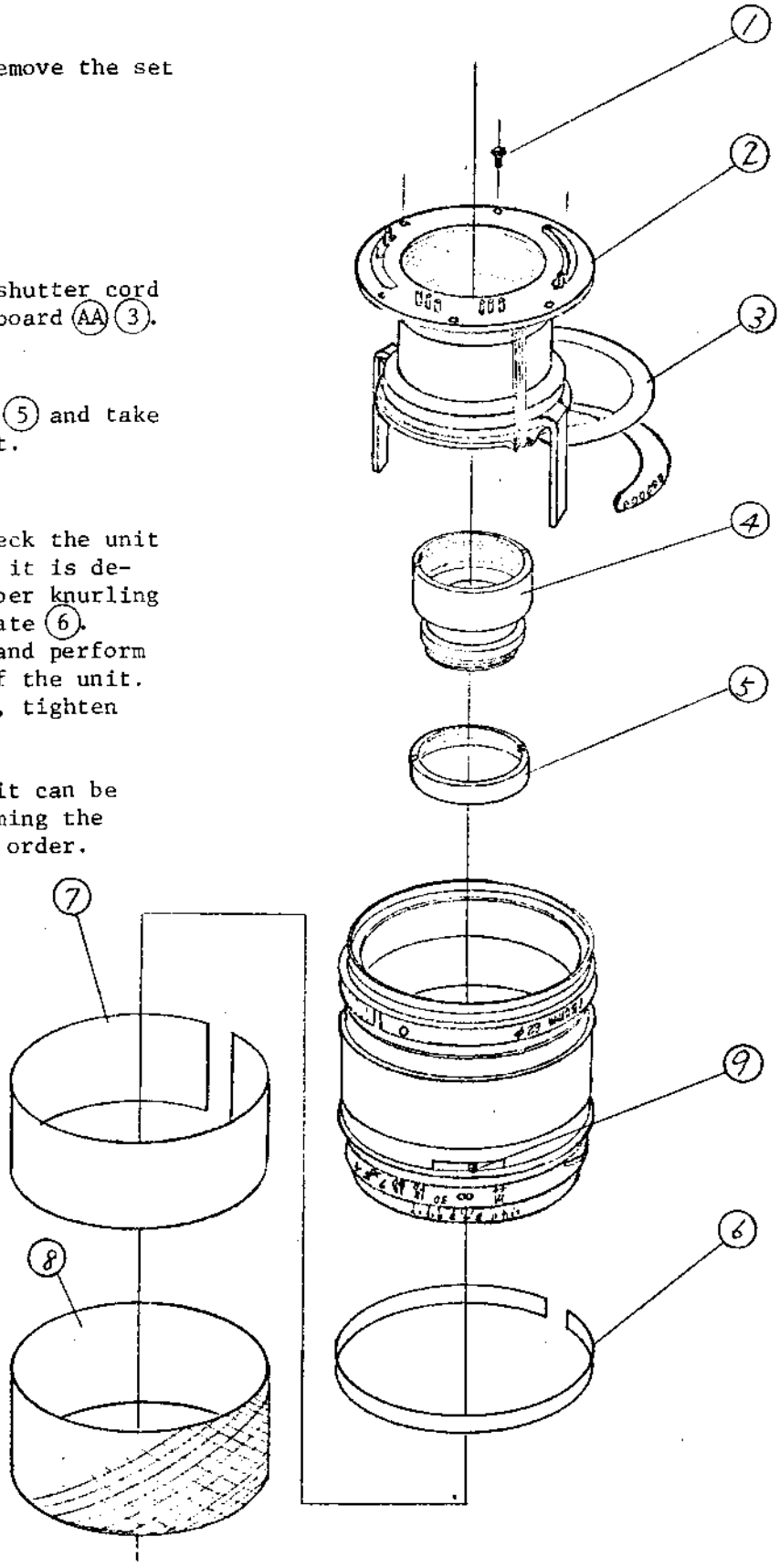
[Step 7]

Loosen the shutter clamp ring (5) and take the shutter out and replace it.

[Step 8]

After replacing a shutter, check the unit it if properly assembled. If it is deviated partly, remove the rubber knurling ring (8), tape (7) and cover plate (6). After that, loosen screws (9) and perform mechanical focus adjustment of the unit. Upon completion of adjustment, tighten those screws securely.

Note: Assembly of shutter unit can be accomplished by performing the above steps in reverse order.



9	1PM1.7x3.5	Pan-head small screw
8	1147-13	Rubber-knurling ring
7	1147-34	Tape
6	1144-12	Cover plate
5	1144-15	Shutter clamp ring
4		Rear lens
3	1-710490	Flexible printed circuit board A
2		Set ring unit
1	1FM1.7x3	Countersunk small screw